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**Southeastern  
Massachusetts  
University  
General Catalogue  
1977-1979**

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**North Dartmouth,  
Massachusetts**



For all admissions  
information contact :  
**The Director of Admissions**  
Southeastern  
Massachusetts University  
North Dartmouth,  
Massachusetts 02747  
Telephone : (617)997-9321



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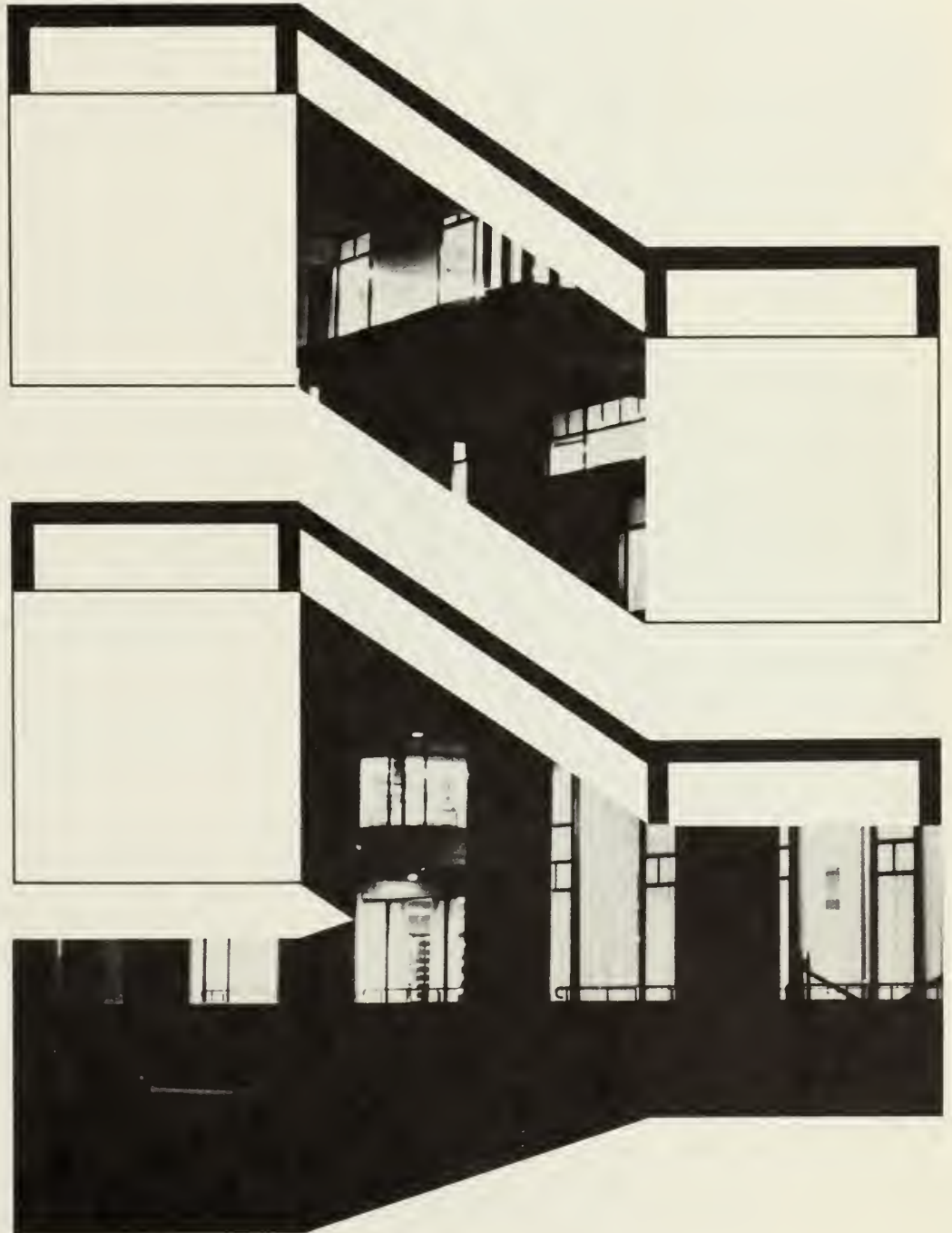




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## General Information



# Accreditation and Institutional Membership

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**Southeastern Massachusetts University and its colleges or departments are accredited by the following associations:**

American Chemical Society

Engineers' Council for Professional Development

National Association of Schools of Art

National League for Nursing

New England Association of Schools and Colleges

**Southeastern Massachusetts University is an institutional member in the following associations:**

American Anthropologists Association

American Association of Collegiate Registrars and Admissions Officers

American Association of Collegiate Schools of Business

American Association of Higher Education

American Association of State Colleges and Universities

American Association of University Women

American College Health Association

American Council on Education

American Library Association

American Mathematical Society

American Society for Engineering Education

American Society for Public Administration

Association of Departments of English

Central Opera Service

College Art Association of America

College Entrance Examination Board

College Placement Council

College Scholarship Service

College and University Personnel Association

Council for Advancement and Support of Education



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Eastern Association of Student Financial Aid Administrators

Eastern College Personnel Officers

Massachusetts Association of Student Financial Aid Administrators

Massachusetts Association of Women Deans

Massachusetts Library Association

Massachusetts Transfer Council

Mathematical Association of America

National Art Education Association

National Association of College Administrators and Counselors

National Association of College Admission Counselors

National Association of College and University  
Business Officers

National Association of Schools of Art

National Association of Student Financial Aid Administrators

National Association of Student Personnel Administrators



National Association of Women Deans, Administrators, and  
Counselors

National League for Nursing

National Opera Association

New England Association of College Admission Counselors

New England Association of Collegiate Registrars and  
Admission Officers

New England Association of Schools and Colleges



# Undergraduate and Graduate Programs

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## Undergraduate (Bachelors)

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### College of Arts and Sciences

Biology

Chemistry

Economics

English

Foreign Languages and Literature (French, German, Portuguese,  
Spanish)

History

Humanities and Social Sciences

Mathematics

Medical Technology

Multidisciplinary Studies

Philosophy

Physics

Political Science

Psychology

Sociology

(Students may meet state accreditation standards through course  
work in the Department of Education.)

### College of Business and Industry

Accounting

Finance

Industrial Relations

Management

Marketing

Textile Chemistry

Textile Technology

### College of Engineering

Civil Engineering

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Electrical Engineering

Mechanical Engineering

Civil Engineering Technology

Electrical Engineering Technology

Mechanical Engineering Technology

Industrial Engineering Technology

**College of Fine and Applied Arts**

Art Education

Art History

Design

Fine Arts

**College of Nursing**

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**Graduate (Masters)**

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Art Education

Bilingual-Bicultural Education

Biology

Business Administration

Chemistry

Electrical Engineering

Mathematics

Medical Laboratory Science

Physics

Textile Chemistry

Textile Technology

Visual Design

# 1977-1978 Academic Calendar

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## First Semester: 1977

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September 1	Academic Year Commences
September 1	Special Student Registration Begins
September 5	Labor Day
September 6	Classes Begin - Fall Semester
October 10	Columbus Day, No Classes
October 28	Mid-Semester
November 10	Follow Friday's Schedule
November 11	Veteran's Day, No Classes
November 23	Thanksgiving Recess Begins (after last class or lab)
November 28	Classes Resume, 8:00 A.M.
December 15	Classes End - Fall Semester
December 16	Examinations Begin
December 23	Examinations End
December 23	Mid-Year Recess

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## Second Semester: 1978

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January 16	Classes Begin, 8:00 A.M.
February 20	Washington's Birthday, No Classes
March 3	Mid-Semester, Spring Vacation Begins (after last class or lab)
March 13	Classes Resume, 8:00 A.M.
March 24	No Class Day
April 17	Patriot's Day, No Classes
April 18	Follow Monday's Schedule
May 4	Classes End - Spring Semester
May 5	Examinations Begin
May 12	Examinations End
June 4	Baccalaureate - Commencement

## Board of Trustees

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### **Ernest I. Rotenberg**

A.B., J.D.  
Chairperson  
Attleboro, Massachusetts  
1972-77

### **Megan Jones**

B.A.  
Vice Chairperson  
Falmouth, Massachusetts  
1974-77

### **Louis A. Gomes, Jr.**

B.S., M.A.  
Secretary  
New Bedford, Massachusetts  
1974-77

### **Sumner James Waring, Jr.**

B.S.  
Treasurer  
Swansea, Massachusetts  
1973-78

### **Bettina A. Briggs**

B.A., J.D.  
Taunton, Massachusetts  
1974-77

### **Frances Burke**

S.B., A.M., Ph.D.  
Brookline, Massachusetts  
1977-82

### **Patrick Carney**

B.A.  
So. Dartmouth, Massachusetts  
1976-78

### **David Steven Greer**

B.S., M.D.  
Fall River, Massachusetts  
1970-82

### **William Jones**

B.S., M.S., (E.E.)  
Newton, Massachusetts  
1970-78

### **Ernest J. Knapton**

B.A., A.M., Ph.D., D.Litt. (Hon.)  
Chatham, Massachusetts  
1970-80

### **Manuel Kyriakakis**

A.B., LL.B., LL.M.  
Somerset, Massachusetts  
1976-78

### **Margaret H. Merry**

A.B., M.A., Ph.D., L.H.D. (Hon.)  
Boston, Massachusetts  
1977-82

### **Kevin O'Neill**

New Bedford, Massachusetts  
1977-78

### **Mabel B. Pina**

A.B.  
New Bedford, Massachusetts  
1976-79

### **William G. Saltonstall**

B.A., M.A., LL.D. (Hon.)  
East Marion, Massachusetts  
1969-78

### **Norman Zalkind**

A.B.  
Fall River, Massachusetts  
1974-77



## Chief Officers of Administration




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### **Donald E. Walker**

A.B., M.Th., Ph.D., L.H.D. (Hon.)  
President

### **Richard M. Fontera**

A.B., A.M., Ph.D.  
Dean of Faculty  
Dean of the Graduate School

### **William C. Wild, Jr.**

B.S., M.B.A., Ed.D.  
Dean of Administration

### **Celestino D. Macedo**

A.B., A.M.  
Dean of Students

### **James C. Murphy**

B.S.  
Treasurer

### **Gordon F. Anderson**

Sc.B., Sc.M., Ph.D.  
Director of Research  
Dean of the College of  
Engineering

### **Joyce Y. Passos**

R.N., B.S., M.S., Ph.D.  
Dean of the College of Nursing

### **Robert L. Piper**

B.A., M.A., Ph.D.  
Dean of Continuing Studies  
and Special Programs

### **Joseph P. Sauro**

B.S., M.S., Ph.D.  
Dean of the College of Arts  
and Sciences

### **Richard J. Ward**

B.A., M.A., Ph.D.  
Dean of the College of Business  
and Industry

### **Dietmar R. Winkler**

Dean of the College of Fine &  
Applied Arts



## SMU: An Overview

Southeastern Massachusetts University is a publicly supported coeducational institution of higher learning. It is fully accredited by the New England Association of Schools and Colleges, Inc. SMU is committed to a philosophy of excellence within the limits of its resources. It has assumed three major responsibilities: instruction, research and service to the larger community of which it is a subsidiary society. Its varied curricula are predicated on the belief that nothing is truly learned until it has been integrated with the purposes of the individual, for facts and principles can never serve any worthy human purpose unless they are restrained and guided by character. Thus, the University earnestly endeavors to provide a climate which will contribute to the development of balanced individuals of wider personal contacts and interests as well as quickened imaginations and disciplined intelligence.

The University is situated on a wooded 710-acre site in Dartmouth, a town of 20,000 bordering Buzzards Bay and proximate to the major cities of Southeastern New England and the cultural and recreational resources of the region. Instruction is given in the colleges of Arts and Sciences, Business and Industry, Engineering, Fine and Applied Arts, Nursing and through the Division of Continuing Studies and Special Programs. The University plays a role in the economic life of the region through its colleges and faculties which make professional and teaching services available to commerce and industry.

Southeastern Massachusetts Technological Institute was created in 1960 by an act of the General Court on the recommendation of the Governor to

provide a diversified educational program for the Southeastern Massachusetts area and for the Commonwealth. In enacting this legislation, the General Court directed that SMTI assume the responsibilities of two existing colleges in the area — Bradford Durfee College of Technology and the New Bedford Institute of Technology, both of which had been established in 1895.

The consolidation of these institutions into SMTI was effected in 1964 and since that time the Institution has been engaged in an intensive program of development. One aspect of this development has been enrichment of the curriculum. In September of 1965, baccalaureate degree programs in the humanities and social science were instituted to complement existing programs in engineering, the sciences, business administration, textile technology and the fine and applied arts.

As a result of this enriching diversification of curricular offerings, Governor Francis B. Sargent of the Commonwealth of Massachusetts signed into law at the Commencement Exercises, June 9, 1969, a bill advocating a change of name from Southeastern Massachusetts Technological Institute to Southeastern Massachusetts University. Thus, on September 7, 1969, the Institute officially became a University.

The student body of the University numbers approximately 5,000 with almost a 1:1 ratio existing between males and females.

The full-time faculty numbers 290 during the current year, with over 75 percent terminally qualified, i.e. with the doctorate or its equivalent in their respective disciplines.

The University's national award winning campus, designed by architect Paul Rudolph includes an Auditorium, Gymnasium-Natatorium, Campus Center, Library-Communications Center, Dining and Residence Halls. The beautifully landscaped campus also includes playing fields for all major sports. Thus SMU's students can pursue a wide range of programs in a stimulating and balanced physical environment.



Applications for admission will be reviewed by the Admissions Committee. Prior to entrance applicants must have completed satisfactorily a secondary school course or its equivalent. A significant portion of the applicant's secondary school courses must have been of college preparatory quality and substance.

Admission to SMU is on a selective basis. The University is interested in applicants whose scholastic achievement, aptitudes, interest, character, established study habits, and health give promise of success in a senior college program. Qualified candidates will be admitted on a "rolling admission" basis until the capacity of the University has been reached.

### Application Procedure

Requests for information should be addressed to:  
Admissions Office  
Southeastern Massachusetts  
University  
North Dartmouth,  
Massachusetts 02747

A non-refundable application fee must accompany all admissions applications. The fee for residents of Massachusetts is ten dollars; the fee for all others is twenty-five dollars. Since it is anticipated that all entering class assignments will have been completed by June 1, applicants should submit complete credentials well in advance of that date (preferably soon after the first marking period in the senior year).

It is the responsibility of the applicant to see that the completed form is submitted to SMU. The school record should include the applicant's academic record for the ninth, tenth, eleventh, and at least the first marking period of the twelfth grade, and his class standing for those years.

### Scholastic Aptitude Test

All applicants (except adults) are required to take the Scholastic Aptitude Test given by the College Entrance Examination Board.

Arrangements for testing can be made by writing to: COLLEGE BOARD, Box 592, Princeton, N.J., 08540 or Box 1025, Berkeley, Cal., 94701.

Transfer students who can present the equivalent of at least thirty semester hours of acceptable credit are not required to submit SAT or SCAT results.

### Achievement Tests

Achievement Tests are not required for admission. However, the University urges non-adult applicants for freshmen entrance to submit test results in appropriate subject matter areas. The achievement tests have significant predictive value, especially in the sciences, and can be a valuable source of data in the decision process.

In the past applicants whose academic records were otherwise "marginal", have gained acceptance by virtue of strong performances on these tests.

It is suggested that applicants seek advice relative to the achievement tests from their secondary school guidance counselors.

The foreign language achievement tests are used for placement when an applicant intends to continue at SMU the study of a language begun prior to entrance. At present French, German, Russian, Spanish, and Portuguese are being offered at SMU. Since there is no CEEB achievement test offered in

Portuguese, placement will be determined by the department prior to registration.

### Preferred Test Dates

Applicants should submit Scholastic Aptitude Test scores as early as practicable. Since the entering class assignments may have been completed before the end of May, delay beyond the March series should be avoided. Scores on tests taken prior to the current academic year may be used with or substituted for current tests in meeting the requirement.

### Test Score Reports

Full responsibility for arranging to complete the appropriate testing program must be assumed by each applicant. Official scores must be reported directly from CEEB headquarters. SMU's data processing system utilizes the magnetic tape reports which are supplied only by the CEEB, and applicants must request that their score reports be sent to SMU (Code No. 3786).

### Adult Applicants

In the case of adult applicants (those who completed secondary school at least five years prior to entering SMU), the Committee may waive some of the usual requirements. Adult applicants may substitute the School and College Ability Test (SCAT) for the Scholastic Aptitude Test (SAT). Regularly scheduled institutional administrations of the SCAT will be

held on the SMU campus. Candidates should contact the Admissions Office for further detail.

Adults who would like to discuss their educational plans are encouraged to contact the Admissions Office in order that an appointment can be arranged.

### Interviews

Personal interviews are not part of the admissions procedure. It is neither possible nor necessary for most applicants to be interviewed individually.

Group interviews will be scheduled at least once a week, and appointments may be made by writing or telephoning the Admissions Office (617 997-9321). Most questions can be answered readily in an exchange of correspondence, but if a unique problem requires personal discussion, an appointment can be arranged.

Complete data relating to the problem must be available at the time of the appointment in order to provide a basis for intelligent discussion.

### Foreign Students

Foreign students are required to submit a preliminary application, which can be obtained from the Admissions Office, prior to filing the final application. In addition to all other requirements, foreign applicants whose native language is other than English must arrange to complete the Test of English as a Foreign Language (TOEFL), which is offered at regularly scheduled intervals throughout the world.

Foreign applicants currently studying in the United States or in institutions abroad where the language of instruction is

English are exempted from the TOEFL requirement. Complete information concerning the TOEFL can be obtained by writing to the College Entrance Examination Board.

### Transfer Admission

SMU accepts qualified candidates for advanced standing from approved institutions. The quality and quantity of work completed at the previous institution determines the status of transfer students.

Transfer applicants should submit complete credentials as soon as possible after the end of the fall semester.

The admissions requirements and procedures for transfer applicants are quite similar to those for freshman entrance. Transfer students who will have received associate or bachelor's degrees prior to entering SMU are not required to submit secondary school records. Transfer students who can present the equivalent of at least thirty semester hours of acceptable credit are not required to submit SAT or SCAT results. With these exceptions transfer applicants must follow the freshman application procedure as previously described.

Transfer applicants must also submit official transcripts from all post-secondary degree granting institutions attended. Applicants enrolled in a program of study at the time of application must submit a listing of all courses in progress. Applicants must submit letters of recommendation from the academic dean at each of the institutions at which they have been degree candidates.





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**Advanced Standing**

Transcripts of courses completed at other institutions prior to admission will be evaluated by the Dean of the college into which the student is accepted. Transfer of credit will be recorded on the student's permanent record card but will not be calculated in his grade point average.

**Requirements for Admission**

It is expected that the successful applicant's secondary school program will include at least twelve units of college preparatory courses including the following: four units of English, two units of Social Science (including one in U.S. History), two units of Mathematics, two units of the same Foreign Language, one unit of Natural Science. Although two units of the same Foreign Language are strongly recommended for all applicants, they are required only for applicants to programs within the College of Arts and Sciences (all programs).

**Specific Course Requirements**

Applicants seeking admission to the following programs must present secondary school records which include the specific courses described below: Engineering, Mathematics, Chemistry, Physics and Textile Chemistry.

Three and one-half units in College Preparatory Mathematics which must include at least two units in Algebra and one-half unit in Trigonometry. Either Physics and Chemistry, one of which must be a laboratory course, or three units in Natural Science, one of which must be a laboratory course, or three units in Natural Science, one of which must be a laboratory course in Physics or Chemistry. Physics is strongly recommended for all engineering applicants.

**Biology, Medical Technology, Nursing and Textile Technology:**

Three units of College Preparatory Mathematics which must include two units of Algebra. Two units of Natural Science.

**Business Administration**

Three units of College Preparatory Mathematics which must include two units of Algebra.

A person of extraordinary promise and talent may request admission although he or she does not meet all the requirements specified above.

**Admission to Colleges of Nursing and Fine and Applied Arts:**

See special requirements described under College of Nursing and College of Fine and Applied Arts sections of this catalog.

**Graduate School**

The Graduate School offers programs at the graduate level leading to the Master's degree in Art Education, Bilingual/Bicultural Education, Biology, Accounting and Finance and Management, Chemistry, Electrical Engineering, Mathematics, Medical Laboratory Science, Physics, Textile Chemistry, Textile Technology and Visual Design. Information concerning requirements for admission, catalog requests and new programs may be directed to the Graduate School Office.

**Regional Student Program**

The New England Regional Student Program enables residents of Connecticut, Maine, New Hampshire, Rhode Island, and Vermont to be given special consideration for admission to SMU in certain curricula which are not offered at the public universities in their home states.

Qualified applicants under this program are given priority over other out-of-state applicants, and if accepted pay only in-state tuition at SMU. Secondary school guidance counselors or the New England Board of Higher Education, 40 Grove Street, Wellesley, Massachusetts 02181 can provide detailed information concerning the program.

**Special Students**

Qualified students who are not candidates for an SMU degree may be allowed to register for courses as special students. Registration is contingent upon space being available in specific courses for which the student is academically qualified. All requests for special student status must be directed to the Registrar's Office.



### College Now-A Program For Academically Disadvantaged Students

Since September of 1968 the University has expanded its admission to extend the benefits of a college education to those who have completed high school or its equivalent, but whose educational achievement has been hampered as a result of social, educational and/or economic inequities existing in our society.

Students for the College Now Program, as it is called at SMU, are chosen individually on the basis of high motivation and academic potential. Supportive services are provided to increase the chances for educational success, and financial aid is available through a variety of sources.

Persons interested in applying for the College Now Program should follow the regular SMU application procedure. A place is provided on the application for them to indicate their interest in the Program.

Financial aid is available through the SMU financial Aid Office. See the section of financial aid for details.

Further information may be obtained from the office of the Director of College Now located in the Group II Building, North Lounge.

### Individual Curriculum Planning

The various curricula are designed to meet the interests and the needs of those who enter the University. Many students will, however, elect to supplement their programs with individually initiated learning experiences. Opportunities for such self-expression are varied and include: independent study (faculty supervised research into areas of study outside of the current curriculum), contract learning (non-traditional learning experiences undertaken in conjunction with an approved sponsoring agency), and cross-registration (selection of courses from one or more public and private colleges in the region). Some students will elect to create their own curricula by taking advantage of the opportunities afforded by the multi-disciplinary studies program (self-initiated

interdepartmental and/or interdisciplinary major programs).

#### CLEP and Advanced Placement

The College Entrance Examination Board College Level Examination Program (CLEP) enables those who have reached the college level of education outside the classroom to demonstrate their achievement and to use the test results for college credit and/or placement.

One semester credit or two semesters credit will be awarded for a grade at or above the fiftieth percentile on a CLEP Subject Examination. Such credits may be used to satisfy distribution requirements or as elective credits. The equivalency of CLEP examinations to SMU courses has been determined by the subject matter department. Three or six

credits each will be awarded for a grade at or above the fiftieth percentile on any of the five CLEP General Examinations. These credits shall not be used in addition to Subject Examination credits in the same area. They shall be applied only to satisfy distribution requirements or as elective credits outside the major field of a degree candidate.

For military service school training, credit will be awarded according to the recommendations contained in the 1976 Guide to the Evaluation of Educational Experience in the Armed Services of the American Council on Education. These credits shall be applied only outside the major field of a degree candidate. Ex-servicemen should use CLEP Subject Examinations to establish proficiency within their

major field.

The University recognizes that ever-increasing numbers of students complete appropriate college-level studies in secondary school. Advanced placement and college credit are awarded to students presenting Advanced Placement Examination grades of three or higher. The AP exams are offered by the College Entrance Examination Board. Such credit may be used to satisfy distribution requirements or as elective credits outside the major field of a degree candidate or to allow omission of equivalent SMU courses.

CLEP is offered through the services of the Division of Continuing Studies.



### **Contract Learning**

Contract Learning is the program which enables students to earn academic credits for experiential learning projects formulated with the advice and consent of faculty. It is based on the premise that all learning worthy of credit is not confined to the classroom. The goal of the program is to provide opportunities for students to accomplish the following:

- a. To develop learner-centered experiences and problem solving skills;
- b. To learn by doing;
- c. To apply theory to actual working situations;
- d. To synthesize knowledge from a variety of sources;
- e. To gain a greater degree of self-direction; and
- f. To test a tentative career choice.

The program is open to degree candidates who in general should be juniors or seniors. Students below the junior level who can establish their capability for a proposed project may participate in the program.

The project must be a learning experience for the student and must be related to an academic discipline. Experiences include jobs, internships, student activities, volunteer work or special projects. A Contract Learning project does not have to be related to a student's major. It must be done in conjunction with an outside agency. Students may obtain their own outside agency or select one from the University's listing.

A faculty member of the student's choice, called a faculty sponsor, and the sponsor's department chairperson must approve the proposed experience, objectives, credit value, and evaluation procedure.

The program is initiated by the student entering into an agreement (contract) with an outside agency, faculty sponsor and department to participate in a proposed learning experience during a semester or a summer for a specified number of credits. At the end of the contract period, the sponsor evaluates the student's achievement after meeting with the student and outside agency supervisor. Upon the successful completion of the contract, the student is granted the specified credits (no grade) by the sponsor. If the credits are not applied to the student's major, they are counted as free electives. The student's department chairperson approves the manner in which credits will be used within the degree program.

The number of credits earned under Contract Learning shall ordinarily not exceed one-eighth of the credits earned at S.M.U. by the student, unless otherwise determined by the Dean of the College.

### **Multidisciplinary Major**

See College of Arts and Sciences section.

### **Independent Study**

Upper division students whose academic records are meritorious may request to do independent study for up to six (6) semester hours of credit (maximum allowed for entire academic career) upon recommendation of the department chairman together with a faculty sponsor and the approval of the student's academic dean. The student must submit a written proposal and outline of the program of study to be undertaken, which, if approved by the sponsor and the department chairman will become a guide for evaluating the student's performance and accomplishment. Application forms are available at the Registrar's office.

The student will be held responsible for meeting the requirements of the independent study as outlined and approved, and the sponsor will assume responsibility for coordinating the independent study, evaluating its results and determining an appropriate grade.

Independent study will only be approved for research into areas of study that do not duplicate the University's current curriculum of courses.

### **SACHEM Cross-Registration**

The consortium of area colleges known as SACHEM (South-eastern Association for the Cooperation of Higher Education in Massachusetts) allows SMU students to register for courses at Stonehill, Bridgewater State, and Wheaton Colleges; Bristol, Cape Cod, and Massasoit Community Colleges; the Massachusetts Maritime Academy; Dean Junior College; and Swain School of Design. Cross-registration is on a space-available basis. For further information contact the SMU Registrar's Office.

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### **Center for the Portuguese Speaking World**

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In response to the academic and cultural interests of its predominantly Portuguese service area, SMU offers a wide diversity of courses in Portuguese Language and Literature, History, Political Science, and Sociology/Anthropology. Those course offerings which deal with Portuguese speaking nations and peoples around the world form part of the certificate program of the Center for the Portuguese Speaking World.

Successful completion of 18 credit hours in approved courses, including basic competency in the Portuguese language, and a senior honors paper, are the requirements for students wishing to receive a certificate in studies of the Portuguese Speaking World.

In addition, the Center conducts a speakers' series, an exchange program, Portuguese Cultural Week, and a Summer Institute on Portugal in cooperation with the Division of Continuing Studies.

Inquiries concerning the Certificate program or sponsored events may be directed to: Chairperson, Center for the Portuguese Speaking World, Southeastern Massachusetts University, North Dartmouth, MA 02747.



# Student Expenses

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## Tuition and Fees

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### Matriculation Fee

A student who has been accepted for admission to SMU must submit a matriculation fee of \$50.00 in check or money order, made payable to SMU. This fee will be applied towards tuition, upon registration. Students who fail to make this payment before the designated date will not be allowed to matriculate. In the event of withdrawal, the fee will be refunded if notification is received in writing by the Director of Admissions prior to June 15.

### Tuition

As a state-supported institution, SMU's programs and facilities are available at modest tuition rates to residents of the Commonwealth of Massachusetts. The tuition charge for resident students is \$240.00 per semester, or \$24/per credit for part-time students. Tuition for non-resident students is \$592.00 per semester, or \$59.20/per credit for part-time students.\*

\*Tuition for Massachusetts residents will be \$262.50 per semester for the 1978-79 academic year.

A "resident student" is defined as one whose legal domicile shall have been within the Commonwealth of Massachusetts for a period not less than one year immediately preceeding the date of the applicable semester. All others are defined as non-resident students".

No student shall be deemed to have become a resident student solely by attendance at the University. A resident student shall not lose his or her status as such as long as he or she is registered for successive semesters at the University. The President of the University is authorized to determine the residency status

of all students in accordance with these policies, and his decision shall be final and binding.

Any willful misrepresentation by a student for the purpose of acquiring or retaining resident status shall be deemed sufficient cause for dismissal from the University.

A few general principles are included here to assist prospective students in considering their residency status. Usually, the domicile of a minor will be presumed to be that of his or her parents or guardian unless he or she is emancipated. One's domicile is the permanent home to which he or she plans to return at the termination of any temporary residence elsewhere. "Permanent home" means that place which a person considers to be his or her home either permanently or for the indefinite foreseeable future. One can have but a single domicile at any time. In changing domiciles, one retains his or her old domicile until he or she fully acquires a new one.

The Board of Trustees has authorized a program intended to offset rises in tuition by the awarding of tuition reductions to financially needy undergraduate students who are residents of Massachusetts. These awards are made in increments up to a maximum of the full cost of tuition, and are awarded by the Financial Aid Office. Eligibility is determined by demonstrated financial need on the same basis and the same application procedures and deadlines as with other University-administered aid programs.

### General Fee

All students are assessed a General Fee of \$65 per year,

payable with the fall semester tuition. The fee is currently used to support the men's and women's athletic programs, student government, student publications, the student radio station, and various other student related activities. For part-time students the rate is \$6.50/per credit.

### Campus Center Fee

A \$40 per year Campus Center fee is also assessed all students, payable with the fall semester tuition. The fee is used to support the programming activities and the general administrative expenses involved in operating the Campus Center. A Board of Governors, composed of 13 Students, 1 Alumni, and 2 Administrators, oversees the operation. For part-time students the rate is \$4/per credit.

### Late Registration Fee

A student will be permitted to register after the designated registration date only with the registrar's approval. A \$5.00 fee will be assessed for this privilege.

### Late Payment Fee

All charges are due and payable at a date set by SMU (usually two weeks prior to the start of classes each semester). Students who are unable to make payment by the due date must receive permission for deferred payment from the Treasurer, in which case, a late payment fee of \$5.00 will be required. Students may not register until all charges have been paid or deferred.

### Orientation Fee

A \$10.00 Orientation Fee is assessed all Freshmen and Transfer students to defray the expenses of the Summer Orientation Program. In addition, Freshmen are required to attend



1-80  
1-80

a two-day, overnight program, at an approximate cost of \$15.00.

#### Health Fee

All students are assessed a \$15 Health Fee, payable with the Fall Semester tuition. This fee is used to support the on-campus Health Services, as well as limited accident insurance. Part-time students pay \$1.50 per credit.

#### Studio/Lab Fee

Students registered in certain studio or laboratory courses are required to pay a \$10 Studio/Lab Fee, which is used to pay for supplementary instructional materials.

#### Room and Board

Room and Board for the 1977-78 Academic Year is:

15 meal plan:	
double room	\$2,024.00
single room	\$2,074.00
19 meal plan:	
double room	\$2,150.00
single room	\$2,200.00
Flexible 15 meal plan:	
double room	\$2,129.00
single room	\$2,179.00

Further details and instructions will be forwarded upon acceptance.

#### Application Fee

A \$10, non-refundable application fee is assessed all Massachusetts applicants, while a \$25 fee is assessed all non-Massachusetts applicants.

#### Commencement Fee

A commencement fee of \$25 will be assessed all students in their last semester prior to receiving a degree, to help defray commencement costs.

#### Books and Supplies

Cost for books and supplies vary with class and curriculum, but \$200 per year is an estimated

average. First year Engineering students have an additional expense of from \$25 to \$50 for engineering drawing equipment and related materials. Students in the College of Fine and Applied Arts may incur some additional expenses for paints, brushes and the like.

#### Refunds

A student who withdraws from SMU for any reason before a semester is completed will be granted a refund of tuition according to the refund schedule given below. A student who remits, in advance, a payment of tuition and fees and does not subsequently register will be given full refund of tuition, and fees. If a student withdraws after registering, either for the fall or spring semester, the general fee and Campus Center fee are forfeited and the tuition is refunded

in accordance with the refund schedule.

#### Refund Schedule

Within the first two weeks from the beginning of the semester	90%
During the third through sixth week	60%
After the sixth week	No refund

#### Summary of Annual Expenses (exclusive of room and board)

Massachusetts Residents Tuition (\$240 per semester)*	480.00
Health Fee	15.00
General	65.00
Student Union Fee	40.00
Orientation Fee (new students)	10.00
Books and Supplies	200.00
	<u>810.00</u>

Non-Massachusetts Residents Tuition (\$592 per semester)	1,184.00
Health Fee	15.00
General Fee	65.00
Student Union Fee	40.00
Orientation Fee (new students)	10.00
Books and Supplies	200.00
Total	<u>1,514.00</u>

All fee amounts are subject to change at the discretion of the University. Proper notification, however, will occur if, and when, any such changes are approved by the Board of Trustees.

\*\$262.50 per semester for the 1978-79 academic year.



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## Student Services

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The function of those offices which comprise the Division of Student Services is to assist students in gaining maximum educational benefit from their college experience. These offices accomplish this function by providing a total program of assistance designed to meet the basic needs of students and to create learning experiences which encourage self-understanding and self-direction.

### The Dean of Students

The Dean of Students directs and supervises all of the activities of the Division of Student Services in order that they effectively meet the broad educational goals of the University and the individual needs of students. In the administration of the Division, the Dean is assisted by an Associate Dean of Students who also coordinates experiential learning programs designed to enhance the self-direction of students.

### Student Life Office

The general purpose of this office is to improve the quality of campus life by providing direct assistance to student groups and organizations and by advising individual students. The responsibilities assigned to the office include the area of student conduct and the formulation of recommendations on disciplinary action. Information and assistance for international students are also provided.

In addition to two Associate Deans of Students, the office includes the Director of Residence Life, who is responsible for all Residence Hall programming, as well as the Director of the Campus Center who is responsible for campus center programming, and the University Chaplains.

### Counseling Center

The Counseling Center serves as a "growth" center for students. It offers a broad spectrum of counseling and psychological services designed to assist them in mobilizing their creative energies and in achieving effective personal, social, educational, and vocational development. At SMU counseling is defined as a learning-oriented process of assisting the individual in understanding and accepting one's self, one's environment, and the relationship between the two. It is this sense of awareness which enables students to select appropriate goals and adopt effective behavior.

Students visit the Counseling Center for a variety of reasons. Some seek out information about academic requirements or the resources of the University. Some wish to talk about the choice of a major, graduate school plans, or career opportunities. Others are experiencing difficulties with study skills or anxiety with regard to exams. Many come to talk about their relationships with others or to talk about themselves - their hopes, fears, identity, self-confidence, or doubts. Students often seek the understanding of a counselor during the time of a sudden loss or the change in a relationship with a loved one. These and many more are the reasons students seek someone with whom to talk. They all involve change, which is, essentially, learning and growth.

In addition to personal developmental counseling, the Center offers academic and social advisement through a joint Counseling Center — Student Outreach Program. There is an educational information library. Aptitude, personality, and other

specialized tests are available. Psychological evaluations and referrals are available by the consulting psychiatrist.

The dynamic community aspect of the SMU Counseling Center springs from its outreach programs. The Center conducts a student paraprofessional training program that has made student-to-student counseling a way of life on campus, as well as providing the trained students with experience and background that will make them more effective in whatever area they pursue upon graduation.

Student academic advisors, resident hall assistants and orientation leaders are all trained by the Center's staff. Other outreach activities include consultation with student organizations, especially student self-help groups, human sexuality series, and drug workshops. Human relations groups, and many workshops and group activities are offered that are geared to the common needs of students and special interest groups.

The University Counseling Center is a friendly and active office, where students come to talk about themselves, their problems, and their personal growth. The counselors reach out to prevent and solve many problems before they begin. The Center is a change agent both for individuals and for the University community.



### Student Advisor Program

The Student Advisor Program is part of the outreach activities of the University Counseling Center. It is a paraprofessional training program for peer academic and social advisement.

After careful screening and selection, each student advisor undergoes training in group dynamics, helping skills and in learning the resources of the University. The training is designed to equip the student with interpersonal skills and knowledge to fulfill the role of academic advisor, peer counselor and information source.

At the Student Advisor Drop-In Center, 2nd floor of the Campus Center, Student Advisors provide easily accessible academic information, an opportunity for students to express their concerns about their SMU experience and to learn more about the University's resources, people, programs and opportunities.

A student-run organization, SAP members are actively involved in University life contributing creative energies to a wide variety of community projects and programs.

### Student Health Service

The SMU Health Office is equipped to handle all cases in need of minor health and first aid treatment. Serious cases and accidents are referred to a nearby hospital. A registered nurse is on duty in the Health Office five days a week. A physician is also available daily. Doctors, nurses and ambulance service are available on a "call" basis for resident students.

An SMU student accident insurance plan is provided out of the health fee. It is limited to injuries sustained at college or at a college activity. Besides this basic policy additional student health insurance may be purchased at varying costs depending on the extent and amount of coverage desired.

### Office of University Records (Registrar)

The Director of University Records maintains the official records of all graduate and undergraduate students. The Director conducts registration, arranges the schedules of classes and examinations, enforces certain academic regulations and issues the official transcript from the University. Petitions to receive credit toward the SMU degree for courses which have been taken elsewhere must be filed with the Registrar. The Registrar also certifies enrollment to the Social Security Administration and the United States Immigration Service.

### Veterans' Affairs Office

The programs at SMU are approved for any benefits that may still be available under the GI Bill. Students who are eligible for benefits should obtain an application for benefits from the Office of Veterans' Affairs. The Office will then certify the student's enrollment with the V.A. It is the student/Veteran's responsibility to notify the Office of Veterans' Affairs of any change in his course credit load. The Commonwealth's definition of "Vietnam Veteran" for the purpose of State tuition exemption was changed and became effective with the 1966-69 academic year. This change increases the number of veterans eligible for this benefit. You are eligible if:

1. You served in the Armed Forces
  - a. during the period beginning August 5, 1964 and ending on a date to be determined by presidential proclamation and concurrent resolution of the Congress of the U.S., or
  - b. at least 180 days of active service during the period between February 1, 1955 and August 4, 1964 (anyone awarded a Purple Heart or a service connected disability need not have served the 180 days), and however, tuition exception will not be granted for any academic year beginning 10 years after a veteran's release from active duty; and

2. such service in the U.S. Armed Forces was credited to the Commonwealth of Massachusetts; and

3. you are deemed qualified to attend a state institution of higher education in the Commonwealth. For further particulars, contact the Office of Veterans' Affairs.

### The Office of Career Planning and Placement

A variety of services is offered to students. On-campus interviews are arranged with industries, businesses, government agencies and school departments for seniors seeking positions. Seniors are assisted in the preparation of their placement files which include resumes, references and evaluations. Senior workshops are conducted both semesters.

The Office also assists students with their career development by providing individual counseling in addition to career life planning workshops. An up-to-date career library is in the office.

All part-time and summer time employment is handled by the Office of Career Planning and Placement in addition to the full-time professional employment listings. Any student can register and make use of these services. It is also the responsibility of the office to assist Alumni seeking positions or job changes. There is no fee for the placement services.

### Financial Aid Office

Financial assistance is available at SMU to an ever-increasing number of deserving students. This assistance, in the form of employment, loans, grants and scholarships, enables students to continue their education in spite of limited financial resources. These programs are an increasingly vital supplement to a student's personal resources. With the costs of higher education continually increasing, many students could not attend college without such assistance.

SMU is a member of the College Scholarship Service (CSS) of the College Entrance Examination Board. Participants in CSS subscribe to the principle that the student and the student's family are expected to contribute toward educational costs according to their means, taking into account their income, assets, number of dependents, and other relevant information. Students are expected to contribute from their assets and earnings, including appropriate borrowing against future earnings. The type and amount of aid offered is determined by the student's demonstrated financial need and the financial aid funds available. The financial need is the difference between the student's total educational expenses and the family's expected resources.

All students must submit a copy of the Financial Aid Form (FAF) to the College Scholarship Service, designating SMU as one of the recipients. The FAF may be obtained from a secondary school, the University, or from the CSS. All students, except those specifically exempted by the Financial Aid Office as self-supporting students, must include parental information on the

FAF. Each applicant must also submit a SMU Financial Aid Application. This application is included in the Admissions application materials for new incoming students and is available in the Aid Office for returning students. Documentation verifying financial information reported is required as part of the applicant's financial aid application.

An application for financial assistance is not considered complete until the appropriate Financial Statement, the SMU Financial Aid Application, and all requested verification information is received. The deadline for completing an application is May 1. New students accepted after April 1 will have one month after their admissions acceptance date to complete their applications. Since the funds may be exhausted by early summer, candidates are urged to complete the application process at their earliest convenience. Applications completed after the deadline are processed when available funds and staff time permit.

Financial assistance is not automatically continued or renewed. A new application is required each year for continued consideration. Students will continue to be eligible for assistance upon annual reapplication as long as their demonstrated financial need and eligible enrollment status continues.

### Admissions Office

In addition to regular Admissions, this office also has responsibility for transfer students. See details in Admission section.

### Athletics

SMU has a varied and well-rounded athletic program. Opportunities for participation are available for men and women in recreational, instructional, intramural and intercollegiate sports.

Instructional classes in a wide range of subjects are offered on an elective, non-credit basis to all interested students. A complete intramural program is available to provide an opportunity for all students to participate in athletic activities. Team sports as well as individual tournaments are popular activities for a large number of SMU students.

SMU has varsity intercollegiate programs for men and women in eighteen sports. Men's teams are fielded in baseball, basketball, cross country, fencing, golf, ice hockey, soccer, swimming

and diving, tennis and track. SMU a member of the NCAA, ECAC, NECAC and Colonial Soccer Conference, competes against colleges and universities of comparative size from throughout the New England area.

Women compete in the following intercollegiate sports: basketball, fencing, field hockey, swimming and diving, softball, tennis, track and volleyball. SMU is a member of the AIAW, EAIAW and MAIAW.





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## Co-Curricular Activities

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SMU seeks to promote and foster co-curricular activities as an integral part of college life. It recognizes the value of these activities as a necessary complement to each student's academic work. Participation in out-of-class activities serves to develop greater skills of individual responsibility, leadership, and initiative.

### Student Government

Student Government functions on the SMU campus through the Student Senate, and represents all students by popular election. Students are encouraged to participate actively in student government and are requested to vote in all student elections. The Student Senate must approve the formation of new organizations. This body is the voice of the students in school affairs as members are appointed by the President of the Senate to serve on various faculty and administrative committees.

### Student Judiciary

The Student Judiciary is a system of courts or judicial agencies that provides the protection of due process to any student or student organization at SMU charged with an action calling for discipline.

There are five ascending levels of student judicial authority - Living Unit Judiciaries (one per residence hall, fraternity or sorority house) Governing Group Judiciaries (Interfraternity Council, IFC; Panhellenic Council; Residence Hall Associations); Court of General Affairs which has jurisdiction over lesser student infractions and an appeal body for living unit and governing group judiciaries; University Court which is the final appellate body on all cases not involving suspension, dismissal, or assessment of a grade penalty in

matters of academic dishonesty. It will have jurisdiction over cases of all-University significance; academic rights and freedoms; violation or interpretation of Student Government Constitution or policies of Student Senate and the Constitutionality of its actions. It is the first court where a judgment of dismissal or suspension can be handed down. It also has original jurisdiction over special cases.

The University Discipline Board is the final appeal agency on all penalties of suspension or dismissal. It also has original jurisdiction over special cases.

These include cases of discipline arising from extraordinary or emergency conditions and cases involving a student appeal of a failing grade given on the basis of a charge of plagiarism made by a department or a college and upheld by the University Court.

The student role in this process is a powerful one. Numerically they are the largest segment of any with the exception of the University Discipline Board where they are equal with the faculty. All courts on the lower levels are completely staffed by students. The University Court has five students, one of whom is the Chief Justice; four faculty and two administrators. The University Discipline Board has four students, four faculty and one administrator (Dean of Students who votes only in the case of a tie). The authority of these judicial agencies is complete. Only the Board of Trustees can rescind that authority.

### Plagiarism

All students entering SMU are expected to maintain high standards of academic integrity and

scholarly practice. Plagiarism, whether as a result of failure to understand proper scholarly procedure or as an act of intentional dishonesty, is not allowed.

Plagiarism is defined as: An attempt by a student to represent the work of another as his own. This includes copying the answers of another student in an examination; submitting or copying or substantially restating the work of another person or persons in an oral or written work without citing the appropriate source; and collaborating with someone else in an academic endeavor without acknowledging his contribution.

Penalties for plagiarism generally consist of a reprimand, a lowering of grade or failure in the work allegedly plagiarized, a lowering of grade or failure in the course in which the alleged plagiarism took place, or having to resubmit the work in a more acceptable form.

An instructor, if he considers the offense especially serious, may instead of assessing a penalty himself, refer the matter to the SMU Student Judiciary. When a student is penalized for plagiarism, it shall be understood by all parties concerned that the student has the right to appeal the instructor's decision to the University Court.

### Student Conduct and Organizations

Information on student conduct and organizations is published on an annual basis in the student handbook.

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## Support Services and Facilities

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### Athletic Facilities

Twenty acres of beautifully landscaped playing area comprises the outdoor athletic facilities at SMU.

Included in this area are: thirteen championship plexi-pave tennis courts, two softball fields, four practice fields, two major league baseball diamonds, two soccer fields, an all-weather quarter mile track, field hockey area and archery range. The Gymnasium-Natorium houses locker rooms, showers, equipment rooms, first aid areas, faculty and staff rooms, offices and a classroom.

The huge expanse of the gymnasium provides for three adjoining basketball courts. Each court may be individually separated by coil doors. Forty-six rows of electrically powered bleachers quickly turn the gymnasium into a fieldhouse accommodating 3,000 spectators.

The Natatorium includes a 75' x 44' swimming pool and a separate 35' x 44' diving pool. The diving pool is furnished with two one meter boards and one three meter diving board. Balcony seating in the Natatorium can comfortably hold 500 people.

### Campus Center

The SMU Campus Center serves as the home for many student organizations, student government and university services such as the Campus Shop, University Dining Service, Rathskeller, Games Area, Information Desk, Television Lounges, SMU Radio Station, Student Offices, and a full commercial branch bank.

The Center is a hub for all members of the university community, students, faculty, staff, administration, alumni, and guests. It is not just a building; it is also an

organization and a program. The Center offers an opportunity to all members of the university community to interact. By providing educational, social, cultural and recreational programs. The major emphasis of the programs is directed toward student involvement, as the extra-curricular activities of students have long been recognized as a valuable resource and a cooperative factor in the total educational experience.

The Campus Center Staff along with the Board of Governors is responsible for the administration of the Campus Center as well as the setting of guidelines and running of programs in the Center.

Any inquiries concerning reservations, policies, hours of operation, or programs, should be directed to the Campus Center office.

### Computer Center

The Computer Center serves as the central computing facility for all of the University and provides instructional, research and administrative computing services.

Two computer systems are installed at the Center in the Library-Communications Center. An IBM System 360 model 40 provides batch processing services and a DECSYSTEM-20 provides, principally, time-sharing services. Printer and CRT Terminals are available for student use, primarily in the Academic Computer Services area of the Library-Communications Center.

The systems support a wide range of programming languages, (APL, BASIC, FORTRAN, COBOL, MACRO, etc.) and a library of applications programs for use in engineering,

business, social science, mathematics, and the sciences.

Instruction in computer programming is offered by several departments at the University. The staff of the Center conducts orientation workshops and seminars on a variety of topics for the user community.

### Dining Services

The University provides a variety of dining services for the campus community, and these operations are administered by the Division of Auxiliary Services.

Located in the Campus Center are a cash cafeteria and a snack bar. In addition to regular a-la-carte variety menus, daily specials are offered in these units.

Resident students have a dining hall of their own adjacent to the Campus Center where they participate in a fifteen, nineteen, or flexible fifteen, meal-a-week program as part of their residency requirements.

Catering services for special events are also available through arrangements with the Scheduling and Functions Clerk in the Housing-Dining Office. Automatic vending machines are conveniently located in several areas for incidental and off-hour needs.

Altogether, these dining facilities provide campus service seven days a week while the University is in session.



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## **Library**

The Library/Communications Center supports and supplements all programs of instruction and research with a growing collection of books, periodicals, maps and other materials.

In addition to a book collection numbering in excess of 180,000 volumes, the Library subscribes to 1900 serial titles. It has a growing collection of microform material and an extensive Art Slide Collection. The Library is also a depository for U.S. Government Documents. The resources of the library are available on open shelves. Most material circulates with the exception of journals and reference material. SMU Library is a consortium member of SMCL: Southeastern Massachusetts Cooperating Libraries and also the SACHEM Libraries group. Through membership in these consortia, SMU students have access to the resources of participating libraries.

## **Residence Halls**

The residence units at SMU are designed around a "family suite". Each suite consists of five or six double sleep-study rooms, bathroom facilities, and a family living room with a small kitchen. The Halls include lounge, reception, recreational, multi-purpose, and study rooms. Each house within the residence complex is coeducational; suites are not.

The Director of Housing is in charge of room assignments, billings, and general building operations.

The Director of Residence Life, assisted by Head Resident Assistants, and Resident Assistants, work with the elected house officers and residents to develop

educational, cultural, social, and recreational activities. The seminar rooms are designed to bring together residents, commuting students, faculty, and invited guests from outside the SMU community.

## **Instructional Media Department**

The Instructional Media Department is located in the Library Communications Center, and is comprised of Audio Visual and Television Services.

Educational materials are created by Audio Visual through its darkroom and graphics services. AV also maintains and disburses its collection of 16mm film, video tape, recordings and other forms of media throughout the campus. Equipment for use of this material is also available.

Video tapes are produced by Television Services in cooperation with SMU students, faculty and staff for course assignments, faculty presentations and special programming.

## **The Cooperative Learning Center**

The Cooperative Learning Center is designed to augment the academic growth students seek at Southeastern Massachusetts University. The idea of learning how to learn is a relatively new concept on campus, but many students are already finding it useful. Newer students use the basic skills area (reading, writing, math, science, and library skills) to establish a firm foundation for educational development. Upperclassmen use the services to enrich their academic achievements. Services provided to upperclassmen include: academic advising, individual tutoring, prestatistics, developmental

workshops, and research/term paper techniques. Potential graduates receive assistance in order to further their education or gain employment.

The total services of the Cooperative Learning Center are:

- Writing Lab
- Library Skills
- Counseling
- Tutorial
- Development Workshop
- Summer Program
- Reading Improvement
- Elements of Scientific Study
- Study Skills
- English as a Second Language
- Special Services for Handicapped Students

The staff of the Center is continually developing new modes of instruction that answer individual learning styles. In addition to individual and group instruction there are: audio and video taped programs, computer assisted instruction, programmed learning packages, topical group workshops, and individualized learning tools.

# Academic Regulations

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## Student Status

Matriculating students are those who have been accepted into a degree program. They are further classified according to the number of semester hours they have accumulated:

Freshmen: up to 23 semester hours

Sophomores: 24 - 53 semester hours

Juniors: 54 - 86 semester hours

Seniors: 87 semester hours and above

Special students are those who are not degree candidates.

Courses taken for credit and satisfactorily completed will be counted toward a degree only upon the acceptance of the student into a degree program.

## Credit Hour Limitations

Effective beginning Fall, 1977 for incoming Freshmen and Transfer Students. Effective beginning Spring, 1978 for all other students.

1. Students are permitted to register each semester for no more than two (2) credits in excess of the number of credits required for normal progress toward their degrees. Students who wish to register for credits beyond this credit level should, prior to registration, secure the permission of the Dean of the appropriate College. The Dean shall consult in each case with the Chairperson of the affected department.



2. In cases where what is a normal semester's progress toward a degree is not specified by a department, normal progress shall be defined as the total number of credits required for a particular degree divided by eight (8).

Undergraduate students who are employed while attending the University are cautioned on the number of units carried while employed. The following schedule is offered as a guide:

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## Hours of Employment Per Week

### 1 to 15

Student may carry a full schedule of academic work, i.e., 15 semester hours of credit.

### 16 to 25

Student should plan on carrying only 12 units of academic work.

### 26 or more

Student should plan on carrying only 4 units of academic work.

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### Academic Probation

Any student having a cumulative average below 2.0 will be placed on academic probation and will be so notified by an appropriate notation on the student's transcript. The purpose of academic probation is to alert the student to the possibility of academic disqualification. It will be the student's responsibility to take remedial action after this warning.

A student on academic probation is required to seek the advice and to obtain the signature of the faculty advisor or academic counselor prior to course registration and to follow such advice whether it be to reduce the academic load, reduce participation in extra-curricular activities or to reduce hours of employment off campus.

### Academic Disqualification

A student will be dismissed if at the beginning of an academic year the cumulative grade-point average is below a minimum obtained in the following fashion:

$$\text{Minimum average} = 2 - \frac{24}{C}$$

(C = the number of credits attempted at SMU including S, P, and CR grades and those accepted for transfer from any other institution.)

For example, a student transferred into the junior class with 60 units of advanced standing credit who has attempted 30 units as a junior at SMU will compute the minimum average in the following manner:

Minimum average:

$$2 - \frac{24}{60 - 30} =$$

$$2 - \frac{24}{90} = 1.73$$

The Dean of the College may make exceptions to this rule only in cases where the student can present just cause to be an exception.

Students disqualified for academic deficiency are ineligible for matriculation until they have been readmitted to the University.

### Registration

New students and transfer students are required to plan their programs with the help of advisers during orientation, and returning students should also consult with their advisers in arranging their programs for the following academic year. Returning students register in the spring for the following fall semester and in December for

the following spring semester. Registration will not be considered complete until all financial obligations to the University are met.

Students on academic probation are advised to carry a modified program, one course less than the normal course load is suggested.

Late registration is permitted, on payment of a late fee of \$5.00, prior to the third week of the semester.

### Changes in Academic Programs

Requests for change of academic major or college must be approved by the Dean of that College. The petitioner should obtain a change of major/college form from the Registrar's Office and follow the appropriate procedures stated on the form.

During the first two weeks of the semester a student may officially ADD and/or DROP a course without a recorded grade. There can be no new admission to courses after the second week of the semester. During the third, fourth, or fifth week of the semester a student may withdraw from a course and receive a grade of W. After the fifth week of the semester and prior to the date of the final examination a student may withdraw from a course and receive a grade of WP or WF as determined by the instructor.

### Repeating of courses

A student may repeat a course which has been passed only with the consent of the student's department chairperson and advisor. A student **must** repeat a course which has been failed if such course is a requirement for graduation. In both instances, only the repeat course grade shall enter into the calculation

of the grade-point average presented for satisfaction of the particular degree requirement.

A student may accumulate a maximum of thirty credits in excess of the degree requirement. A transfer student may accumulate excess credits equal to one-fourth of the credits s/he must complete at SMU, but not to exceed thirty credits.

### Attendance

Every student is expected to be present at all lectures and laboratories for which s/he is registered. Unless a satisfactory excuse for absence can be presented to the instructor, excessive absences may result in disciplinary action by the Dean of the College in which the student is enrolled. Such action may include loss of credit for the course, suspension or dismissal.

The student is responsible for the class work and assignments missed by such absences and must take the initiative in finding out what is expected.

A class is to be considered dismissed if the instructor does not report within ten minutes from the beginning of the class period.

### Withdrawal

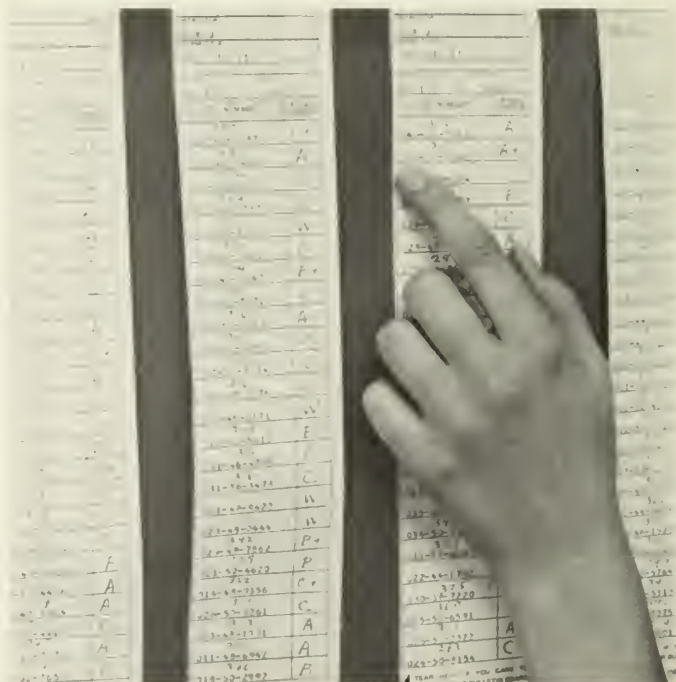
A student wishing to withdraw from SMU must first notify the Registrar and fill out a "Withdrawal Notice" form. Students who withdraw unofficially will be held responsible for registration for the current semester and will jeopardize honorable withdrawal privilege. Veterans who withdraw from SMU are urged to consult with the SMU Veterans' Affairs Office.



## Grades and Grading System

The University's grading system is based on a 4-point scale with + 0.3 quality points on either side of the grade quality points, with the exception of A + which equals 4.0 quality points.

A 90-100 Excellent	A + . . . 4.0 A . . . 4.0 A - . . . 3.7	Outstanding scholarship and an unusual degree of intellectual initiative. 4 grade points	NC	No credit on contract.
B 80-89 Good	B + . . . 3.3 B . . . 3.0 B - . . . 2.7	Superior work done in a sustained and intelligent manner. 3 grade points	S	Credit by transfer, examination of advanced standing, or satisfactory completion of a non-credit course (not included in calculation of scholastic average).
C 70-79 Average	C + . . . 2.3 C . . . 2.0 C - . . . 1.7	A basic grade which indicates the quality of work done by the majority of students. 2 grade points	I	Work incomplete
D 60-69	D + . . . 1.3 D . . . 1.0 D - . . . 0.7	Work of the lowest passing quality, the student having mastered the bare minimum of subject matter content. 1 grade point	IP	Work in progress. Applies to Graduate Thesis courses.
F Below 60 Failure		A failure, and if the subject is required, the course must be repeated as soon as possible. 0 grade points	P	Earned by election of Pass/Fail option. 0 grade points
W Withdrawal		Withdrawal without penalty within the first five weeks of a semester. If a student officially withdraws from a course prior to the beginning of the third week, no record of the course will appear on the academic record.		
WP Above 60		Withdrawal and passing after the fifth week.		
WF Below 60		Withdrawal and failing after the fifth week of the semester. 0 grade points		
CR		Credit given upon satisfactory completion of a contract under Contract Learning program. 0 grade points		





### **Scholastic Standing**

A student's standing is determined by the ratio of his total number of quality points to his total number of hours attempted in all his work at Southeastern Massachusetts University. This "grade-point average" does not include work done on a Pass/Fail option.

Whether a one-semester or a two-semester course, the grade received at the end of each semester stands as the final grade for that course for that semester. A grade of F, having no quality point, will be included in the student's cumulative average. An F indicates a failure which may be made up only by repeating the course at SMU or by presenting transfer credits of grade C or better from an approved institution. Each failed course should be taken in the first semester that the course is given immediately following such failure. All courses taken outside of the regular schedule for which credit is to be requested must be approved in advance. Forms to facilitate such approval are available in the Registrar's Office.

A grade of Incomplete (I) shall be reported only when a portion of the required classwork or the final exam has not been completed because of necessary absence of the student, e.g., serious illness, extreme personal circumstances or for scholarly reasons at the request of the instructor. The Incomplete (I) grade can be converted to a grade only on the initiative of the instructor. If an instructor is unsuccessful in effecting student compliance with the course requirements within the stipulated time period, the I-grade will automatically revert to an F on the student's record unless the student completes the work within two (2) semesters.

### **Pass-Fail Option Eligibility and Availability**

The Pass-Fail Option will be open to juniors and seniors in all courses except:

1. any course specified as a degree requirement
2. any course in a student's major, unless that department rules otherwise
3. any course used to meet the language or science requirements
4. in the College of Engineering, any course used to satisfy Humanities and Social Science requirements.

### **Selection of Pass-Fail Option**

Students will be given five (5) weeks from the opening of the semester to exercise the option, which shall then be irrevocable. Only the student and the Registrar shall know that an option has been selected. Grading practice, vis-a-vis faculty and students, will be identical to the usual marking procedure.

The burden of selecting a proper course under Pass/Fail rules shall be borne by the student. Any doubt shall be resolved by consultation with the Dean of the College in which he/she is enrolled. If the student elects a course for which he/she is not eligible under the Pass/Fail Option, he/she will be subject to the usual marking practices.

Grading practices under this option are as follows:

1. A Pass/Fail student who does passing (i.e., A through D) work in a course shall be given a grade of P (Pass). Pass in a course shall earn a student graduation credits but shall not be counted in his/her cumulative average.
2. A Pass/Fail student who fails a course shall be given a grade of F, which shall not be counted in his/her grade point average.

3. The Registrar shall be required to keep a separate record of the grades obtained in the Pass/Fail courses and will issue this record only on the request of the student.

The transcription will contain the Pass/Fail notation, but the grade actually achieved will be kept on file in the Registrar's office.

### **Transfer of Credit and Advanced Standing**

Requests to receive credit for courses taken at other institutions prior to admittance should be filed with the Director of Admissions and evaluated by the Dean of the appropriate College. Such requests must be accompanied by official transcripts and catalogues containing course descriptions from the colleges involved.

A grade of C or better is required for transfer credit.

Transfer of credit will be recorded on the student's permanent record card but will not be calculated in the student's grade-point average. A student registered at SMU, who wishes to enroll in courses in another college for transfer credit to SMU must have such courses approved in advance by the Dean of the College.

On completion of these courses, an official transcript should be forwarded to the Registrar. Students transferring from Massachusetts community colleges and who qualify under the transfer compact will be awarded all credit.

### **Dean's List**

Following the completion of each semester, the Registrar submits to the academic deans a "Dean's List" consisting of the names of those students whose academic record for the previous semester is of high quality.

To be eligible for the Dean's List, a student must achieve a grade-point average of at least 3.2 or higher for the semester in a minimum of 12 earned credits excluding courses taken under the Pass/Fail option.

### **Graduation Requirements**

To qualify for graduation a candidate must satisfy the following requirements.

1. The satisfactory completion of all work done in the student's major field of concentration.
2. A cumulative quality point average of not less than 2.0 for all degree requirements.
3. Two semesters or the equivalent, earning not less than 30 credits, are required in residence, uninterrupted by any work in another institution.

Total credits required by the Colleges for graduation are:

**College of Arts and Sciences -**  
120.0

### **College of Business and Industry**

Business Administration - 120.0  
Textile Chemistry - 122.0  
Textile Technology - 126.0

### **College of Engineering**

Civil Engineering - 133.0  
Electrical Engineering - 133.5  
Mechanical Engineering - 132.5  
Civil Engineering Technology,  
Mechanical Engineering  
Technology, and Industrial  
Engineering - 127.0  
Electrical Engineering  
Technology - 124.0

### **College of Fine and Applied Arts**

Art Education, Visual Design,  
and Textile Design - 126.0  
Fine Arts - 127.0  
Art History - 123.0

### **College of Nursing - 120.0**

Students who expect to meet requirements for their degrees in May are required to file with the Registrar, by the previous January 1st, a notice of Graduation Eligibility. Appropriate forms will be available from the Registrar.

### **Honors Requirements**

To graduate with distinction a student must achieve a cumulative grade-point average of:

3,200 to 3,499 distinction  
3,500 to 3,799 high distinction  
3,800 to 4,000 highest distinction

Graduation with "distinction", with "high distinction" or with "highest distinction" is inscribed on the student's diploma.

Several departments allow qualified students to subscribe to programs leading to honors in the major field. Students satisfactorily completing the departmental requirements for Honors in the major will, upon graduation, have their diplomas so inscribed.

### **Scheduling of Courses**

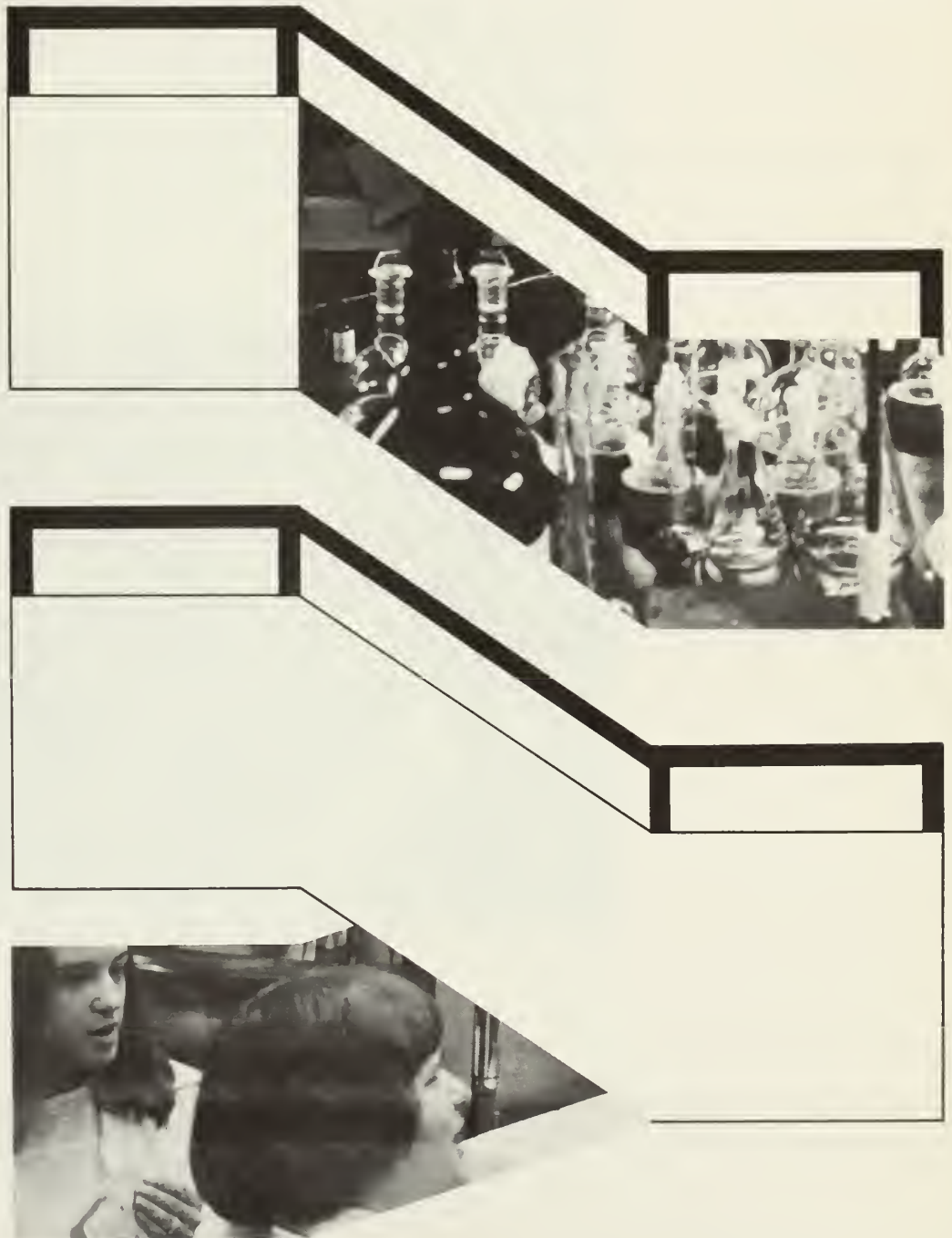
The actual scheduling of courses is dependent on the availability of qualified faculty and resources.

### **Readmission Procedure**

For students who are in good standing and officially withdrew, readmissions shall be by the Registrar if there is no change in major.

For students whose academic status was unsatisfactory or who were making insufficient progress when they withdrew and for students who wish to return in a different major, readmission shall be by the appropriate Academic Dean.

For students who have graduated and wish to enroll for a second degree and for students who did not withdraw officially, the Admissions Office will readmit only after specific recommendations on such students are elicited by the Admissions Office from the appropriate college dean. The Admissions Office will also review such applicants with the Counseling Center as is appropriate.



Students in the College of Arts and Sciences may select their major fields of study from among the following. Biology, Chemistry, Economics, English, History, Humanities and Social Sciences, Modern Languages (French, German, Portuguese, Spanish), Mathematics, Medical Technology, Multidisciplinary Studies, Philosophy, Physics, Political Science, Psychology and Sociology.

Majors in Biology, Chemistry, Medical Technology and Physics are candidates for the Bachelor of Science degree. Majors in Mathematics may elect to be candidates for either the Bachelor of Arts or the Bachelor of Science degree. All other majors are candidates for the Bachelor of Arts degree.

Although the University does not offer degrees in Education and Pre-Medical studies, students interested in Education can take sufficient courses to receive State certification, and students intending to enter medical school can plan an appropriate program of study through SMU's Pre-Medical Program with the help of its Advisory Committee.





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**Requirements for the  
Bachelor of Arts Degree  
(Classes of 1978 and 1979)**

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**6 credits**

**Freshman English**

All first year students are required to take Freshman English, a two-semester course in the basic skills of communication, written and spoken.

**6 credits**

**Natural Science**

Six credits must be taken in one of the following sciences:

Biology, Chemistry, Physics.

**9 credits**

**Humanities**

Nine credits must be taken in two of the following three areas:

1. History
2. Philosophy (excluding Logic)
3. Art History, Music History, or Music Theory (excluding Studio or Performance courses).

**6 credits**

**Literature**

(For students not majoring in English)

The six credits must be taken in literature of the English language or another language read in English translation.

**12 credits**

**Social Science**

The credits must not be taken in a student's major field and must be limited to Economics, Political Science, Psychology and Sociology. All twelve credits may not be taken in one department.

**Department Requirements**

Every student must complete at least thirty semester credits of work in his major field. For details see section under major program.

**Free Electives**

A sufficient number of courses must be elected so that the earned credits total a minimum of 120.

**Quality Requirement**

A cumulative grade point average of at least 2.00 out of a possible 4.00 is required of all students.

A grade point average of at least 2.00 is also required in courses in the major field.

**Foreign Language  
Requirements**

Only students majoring in English must satisfy a Foreign Language requirement for the Bachelor of Arts degree. Some departments however do strongly recommend the taking of a foreign language. Students should consult their departmental advisor.

This requirement may be satisfied in one of the following ways:

1. A satisfactory score on the Achievement Test given by the College Entrance Examination Board.
2. Completion of course 202 in a modern language at SMU.
3. Satisfactory performance in both oral and written proficiency tests, if a student has fluency in French, German, Portuguese, Russian or Spanish.

Entering students will be granted advanced standing in the language of their choice on the basis of his score on the Achievement Test and grades in high school. A student who has studied a language for two years or more may not repeat the same language for credit at the elementary level at SMU.

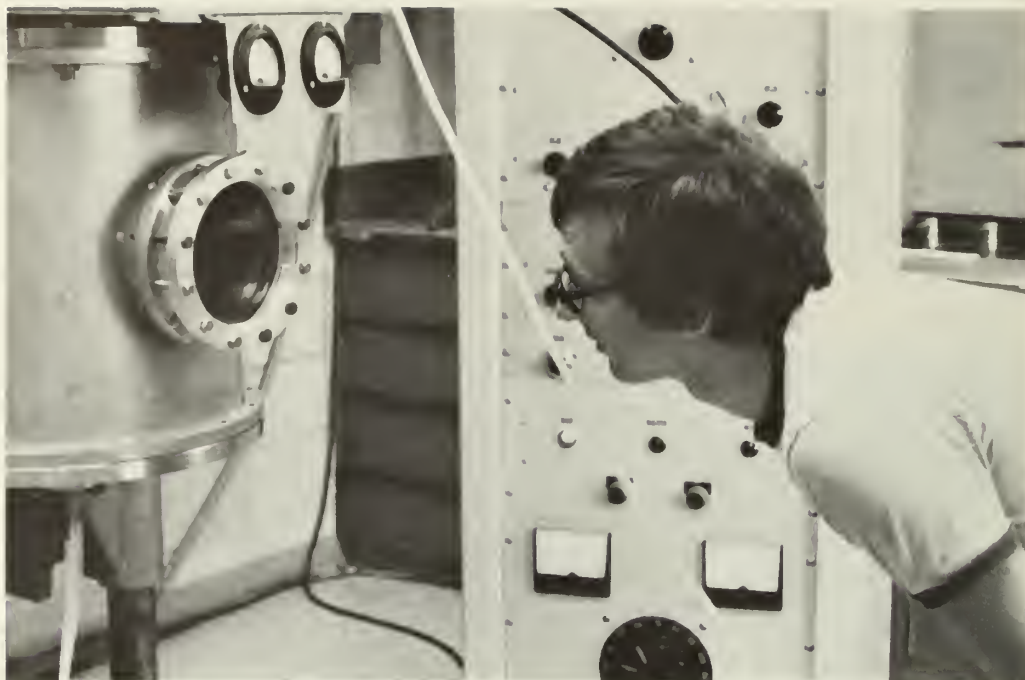
A student who has received advanced standing or has satisfied the language requirement by passing the appropriate

Achievement Test must take the credit equivalent in electives to attain the 120 credits needed for graduation.

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**Requirements for the  
Bachelor of Science Degree  
(Classes of 1978 and 1979)**

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**6 credits  
Freshman English**

All first year students are required to take Freshman English, a two-semester course in the basic skills of communication, written and spoken.

**6 credits  
Literature**

Six credits must be taken in literature of the English language or another language read in English translation.

**12 credits  
Humanities-Social Sciences**  
These credits must be limited to Economics, History, Literature, Philosophy, Political Science, Psychology, Sociology, Art History, Music History or Music Theory (excluding Studio or Performance courses).

**Departmental Requirements**  
See section under major field

**Free Electives**

A sufficient number of courses must be elected so that the earned credits total a minimum of 120.

**Quality Requirement**

A cumulative grade point average of at least 2.00 out of a possible 4.00 is required of all students. A grade point average of at least 2.00 is also required in courses in the major field

**Foreign Language Requirements**

The study of a foreign language is not a requirement for the Bachelor of Science degree. Some departments however do strongly recommend the taking of a foreign language. Students should consult their departmental advisor.

A student who elects to satisfy a language requirement may do so in one of the following ways:

1. A satisfactory score on the

Achievement Test given by the College Entrance Examination Board.

2. Completion of course 202 in a modern language at SMU.

3. Satisfactory performance in both oral and written proficiency tests, if a student has fluency in French, German, Portuguese, Russian or Spanish.

An entering student will be granted advanced standing in the language of his choice on the basis of his score on the Achievement Test and his grades in high school. A student who studied a language for two or more years may not repeat the same language for credit at the elementary level at SMU. A student who has received advanced standing or has satisfied the language requirement by passing the appropriate Achievement Test must take the credit equivalent in electives to attain the 120 credits needed for graduation.

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**Requirements for the  
Bachelor of Arts Degree  
(Beginning with Class of 1980)**

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**6 credits  
Freshman English**

All first year students are required to take Freshman English, a two-semester course in the basic skills of communication, written and spoken.

**6 credits  
Literature**

(For students not majoring in English)  
Credits may be taken in literature of the English language, literature of a Foreign language, or literature of a Foreign language read in English translation. The Departments of English and Foreign Literature and Languages shall specify which courses satisfy this requirement.

**9 credits  
Natural Science**

Courses may be taken in the Biology, Chemistry and Physics Departments or in other Departments at the discretion of the student's major Department.

**12 credits  
Humanities**

The credits must not be taken in a student's major field. No more than 6 credits from any one field. Choose from:

1. History
2. Philosophy (including Logic)
3. Art and Music (excluding Applied courses)
4. Modern Language (including first year 101-102, but excluding Literature)

**12 credits  
Social Science**

The credits must not be taken in a student's major field. No more than 6 credits from any one field. Choose from:

1. Economics
2. Political Science
3. Psychology
4. Sociology

Departmental Requirements, Free Electives, Quality Requirement, and Foreign Language Requirements are the same as for the classes of 1978 and 1979.

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**Requirements for the  
Bachelor of Science Degree  
(Beginning with Class of 1980)**

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**6 credits  
Freshman English**

All first year students are required to take Freshman English, a two-semester course in the basic skills of communication, written and spoken.

**6 credits  
Literature**

Credits may be taken in literature of the English language, literature of a foreign language, or literature of a foreign language read in English translation. The Departments of English and Foreign Literature and Languages shall specify which courses satisfy this requirement.

**18 credits  
Humanities-Social Sciences**

These credits are to be taken from the areas of Humanities and Social Sciences listed below with a minimum of 6 credits from each area.

- Humanities
1. History
  2. Philosophy (including Logic)
  3. Art and Music (excluding Applied courses)
  4. Foreign Language (including first year 101-102, but excluding Literature)

Social Sciences

1. Economics
2. Political Science
3. Psychology
4. Sociology

Departmental Requirements, Free Electives, Quality Requirements, and Foreign Language Requirements are the same as for the classes of 1978 and 1979.

# Biology

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## Faculty and Fields of Interest

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**Yukio Asato** • microbial genetics

**Ronald Campbell** • parasitology

**Robert Edgar** • diatom systematics and ecology; microscopy

**Walter Hatch** • invertebrate physiology

**James Hoff** • marine ecology, fish biology

**Richard Ibara** • physiological ecology of fishes

**Frederick Kazama** • mycology, marine microbiology, cell ultrastructure

**Barton M. Matsumoto** • biological control and insect ecology

**Sanford Moss** • elasmobranch and teleost morphology and behavior, apiculture

**Donald Mulcare** • developmental biology

**Ronald T. Nagao** • plant physiology, biochemistry, growth and development

**Royden Nakamura** • aquaculture/fisheries, marine ecology

**Jean Nichols** • biological oceanography (benthic)

**Francis X. O'Brien** (chairperson)  
• marine invertebrates

**John Reardon** • ecology of coastal zone and dune environments

**Normand H. Sasseville** • anatomy and physiology, human

**James Sears** • ecology of marine algae

**Robert Wilson** • computer analysis of behavior





### Biology Major: General Biology Option

The biology major provides opportunities for building the foundations of a career in one of the many specialties in private industry and in federal and state agencies which employ biologists. The student who elects the General Biology Option may, through appropriate selection of electives, prepare for admission to medical, dental and veterinary colleges and for admission to graduate work in the life sciences. Increasing numbers of students elect to major in biology as a means of providing them-

selves with a general framework of ideas concerning the interactions of living things. A substantial number of these students proceed towards vocational objectives which do not require a specialist's knowledge of biology.

Students who may eventually pursue graduate studies are urged to elect foreign languages and mathematics courses only after consulting with an advisor. Students contemplating graduate school studies should elect

analytic geometry and calculus and should elect courses which provide a foundation in statistics, use of computers and in design of experiments and analysis of data. In many areas of biology a substantial background in physics, electronics, meteorology or geology may be desirable.

### Requirements

First Year (Proposed Sequence)				Semester Credits	First	Second
BO	121	131	Biology of Organisms I		4	
BO	122	132	Biology of Organisms II			4
CH	151	152	Principles of Modern Chemistry		3	3
CH	163	164	Quantitative Chemistry		2	2
MA	101	102	*Elements of College Mathematics		3	3
E	101	102	Freshman English		3	3
					15	15

\*Technical Calculus I and II or Analytic Geometry and Calculus I and II may be substituted for Elements of College Mathematics

Second Year (Proposed Sequence)				Semester Credits	First	Second
BO	124	134	Biology of Populations		4	
BO	234	244	Biology of Cells			4
CH	251	252	Organic Chemistry		3	3
CH	265	266	Organic Chemistry Lab		1	1
PH	101	102	**Introduction to Physics I & II		3	3
			Humanities or Social Science		3	3
			Elective		2	3
					16	17

\*\*Physics 107, 109 Basic Physics may be substituted for Introductory Physics.

### Third and Fourth Years

Course selections for the third and fourth years of the biology major should be determined in consultation with an advisor. During the third and fourth years all majors are required to elect 18 credits in biology, physics, chemistry, engineering or mathematics. These electives may be chosen with the approval of the

advisor prior to registration in the course.

The requirements of the College of Arts and Sciences must also be met prior to graduation.

### Biology and Physical Science Electives for General Biology

#### Option:

Eighteen (18) credits should be elected from the following list of courses. Other upper division courses in mathematics, chemistry, physics, engineering, geology and biology may be used to fulfill upper division requirements in biology with previous permission from the department chairperson

				Credits :
BO	221	222	Anatomy and Physiology I and II	8
BO	231		General Genetics	3
BO	241		General Genetics Laboratory	1
BO	313		Molecular Biology	3
BO	314		General Ecology	4
BO	317		Biology of Invertebrate Animals	4
BO	318		General Entomology	4
BO	321		General Microbiology	4
BO	331		Advanced Genetics	3
BO	350		Survey of Plant Kingdom	4
BO	370		General Physiology	4
BO	404		Molecular Biology	3
BO	409		Directed Study	3
BO	411		Proseminar	3
BO	411		Comparative Physiology	4
BO	421		Developmental Biology	4
BO	424		Biology of Animal Parasites	4
BO	430		Design of Experiments	4
BO	434		Plant Physiology	4
BO	440	441	Research Project	2-2
BO	451		Environmental Health	3
BO	477		Ecology of Coastal Zone	2
BO	509		Directed Study	3
BO	520		Animal Behavior	3

### Biology and Physical Science Electives for Marine Biology and Coastal Zone Ecology

#### Option:

Eighteen (18) credits should be elected from the following list of junior and senior level courses. Other upper division courses in mathematics, chemistry, physics, engineering, geology and biology may be used to fulfill upper division requirements in biology.

Students who have completed the first two years of the biology major may elect to concentrate in courses dealing with the ecology of the coastal zone, its estuaries and inshore waters.

The Marine Environment Option in biology is designed to meet the needs of students who aspire to careers in ecology, marine biology, fisheries biology and biological oceanography. Students who elect the Marine Environment Option are urged to plan their program in close cooperation with their advisor. Faculty in mathematics, chemis-

BO	231	241	General Genetics	4
BO	313		Molecular Biology	4
BO	314		General Ecology	4
BO	315		Biology of Algae	4
BO	316		Descriptive Oceanography	3
BO	317		Biology of Invertebrate Animals	4
BO	318		General Entomology	4
BO	321		General Microbiology	4
BO	331		Advanced Genetics	3
BO	350		Survey of Plant Kingdom	4
BO	411		Proseminar, Current Topics in Biology	4
BO	413		Biology of Fishes	4
BO	414		Comparative Physiology	4
BO	421		Developmental Biology	4
BO	424		Biology of Animal Parasites	4
BO	428		Aquaculture	3
BO	430		Design of Experiments	4
BO	434		Plant Physiology	4
BO	440	441	Research Project	2-2
BO	451		Environmental Health	3
BO	454		Biology of Sharks	3
BO	471		Marine Microbiology	4
BO	479		Developmental Biology of Marine Animals	2
BO	520		Animal Behavior	3
BO	545		Biological Oceanography	4

try and foreign languages is desirable. Russian, German or French are preferred language electives. Biology majors who elect the Marine Environment Option have an opportunity to elect marine-oriented courses during their junior and senior

years and must meet college degree requirements for the B.S. degree. Other upper division courses in mathematics, chemistry, physics, engineering, geology and biology may be used to fulfill upper division requirements in biology.

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## Biology Courses

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### **BO 101 • 3 credits**

#### **General Biology I**

The content of this course deals with the basic concepts of biology and their implications in human affairs.

Lecture 3 hours / Fall Semester

### **BO 102 • 3 credits**

#### **General Biology II**

Continuation of BO 101. These courses may be elected by students wishing to fulfill the requirement of six semester hours in the natural sciences. Not offered for credit to biology majors.

Lecture 3 hours / Spring Semester

### **BO 121, 122 • 3-3 credits**

#### **Biology of Organisms I, II**

The first course for the biology major is an introduction to the world of living things and a consideration of their structure, function, and behavioral adaptations. During the initial half of this two-semester course the student is exposed to the diversity and evolutionary relationships of organisms. The second semester covers the functional and adaptive processes of living organisms with emphasis on solutions to common problems of survival.

Lecture 3 hours / Fall-Spring Semesters

### **BO 131, 132 • 1-1 credit**

#### **Biology of Organisms Laboratory I, II**

The biology of organisms laboratory courses cover two semesters and are closely synchronized to the biology of organisms lecture course (BO 121, 122).

The first semester is a survey of the world of organisms involving

experimentation and observational procedures of some major groups of organisms. The second semester emphasizes the functional aspects of organisms primarily through experimentation.

Laboratory 3 hours / Fall-Spring Semesters

### **BO 124 • 3 credits**

#### **Biology of Populations**

Populations are examined as fundamental evolutionary and ecological units of organization and function with emphasis upon Mendelian and population genetics, evolutionary mechanisms, speciation, adaptations and strategies at the population level, growth and regulation of population size, distribution patterns, biological interactions, and energy and materials flow through communities.

### **BO 134 • 1 credit**

#### **Biology of Populations**

##### **Laboratory**

Emphasis is placed upon working with populations of *Drosophila* with respect to basic Mendelian and population genetics, growth rates, fitness along environmental gradients, competition and predation.

### **BO 141 • 3 credits**

#### **Introduction to Ecology**

An introduction to the structure and metabolism of ecosystems especially as they relate to human affairs. Topics such as energy and materials flow in ecosystems, biological interactions (competition, predation), ecosystem evolution and population structure and dynamics will be examined as the foundations for investigating problems of human demography, epidemiology, food, energy and pollution. Not offered for credit to biology majors.

### **BO 151, 152 • 3-3 credits**

#### **Fundamentals of Biology I, II**

The first course in biology for the nursing major is a rigorous two semester course that meets three hours per week. The first semester is spent in exploring the diversity of life and in comparing similarities and differences among the various groups of organisms. Consideration of the requirements of the individual organism as a functional entity. The second semester is spent in analyzing gene function, cellular function and control mechanisms and the contribution of the individual to the population and the consequence of the population to the species.

### **BO 221 • 3 credits**

#### **Anatomy and Physiology I**

A systematic study of the human body emphasizing structure and function.

Lecture 3 hours / Fall Semester

Prerequisite: BO 121, 124

### **BO 222 • 3 credits**

#### **Anatomy and Physiology II**

Continuation of BO 221

Lecture 3 hours / Spring Semester

Prerequisite: BO 221

### **BO 223 • 1 credit**

#### **Anatomy and Physiology Laboratory I**

Emphasis is placed on methods of measuring physiological processes. Study of body structure is accomplished by dissection of animal specimens and by the use of tissue materials. Laboratory 3 hours / Fall Semester

Prerequisite: BO 121, 124



**BO 224 • 1 credit**  
**Anatomy and Physiology**  
**Laboratory II**

Continuation of BO 223.  
Laboratory 3 hours/Spring Semester  
Prerequisite: BO 223

**BO 231 • 3 credits**  
**General Genetics**

This course is introductory to the science of heredity. The lectures present integrated concept of the gene provided from the study of Mendelian and Molecular genetics. Selected topics in population genetics, quantitative inheritance, and human genetics are included.  
Lecture 3 hours/Fall Semester  
Prerequisite: BO 121, 124.  
BO 234 desirable.

**BO 234 • 3 credits**  
**Biology of Cells**

An inquiry is made into the structures and function of cells. This study includes chemical composition, control mechanisms, and energy transformations on the cellular level.  
Lecture 3 hours/Spring Semester  
Prerequisite: Sophomore standing.

**BO 241 • 1 credit**  
**General Genetics Laboratory**

A laboratory to be taken concurrently with BO 231.  
Laboratory 3 hours/Fall Semester

**BO 252 • 4 credits**  
**Medical Microbiology**

Fundamentals of microbiology is presented to prepare students interested in health science fields. Topics included are basic microbiology, control of microorganisms, host resistance and

pathogenic microorganisms.  
Lecture 3 hours/Laboratory 2 hours/Fall Semester  
Prerequisite: Open only to students enrolled in the College of Nursing

**BO 313 • 4 credits**  
**Molecular Biology**

A narrative and experimental approach to structure, function and regulation at the molecular level. Study includes genetic organization of DNA, replication, regulation of transcription and translation, molecular embryology, gene engineering as well as cell proliferation and abnormal growth.  
Prerequisite: Biology core or consent of instructor.

**BO 314 • 4 credits**  
**General Ecology**

General ecology considers the general field of interrelationships between organisms and their environments with emphasis on the biology of populations, and includes laboratory and field studies of terrestrial, fresh water and marine environments. Extended field trips, some of which will be held on weekends and/or holidays, are an integral part of this course.  
Lecture 2 hours/Laboratory 5 hours  
Spring Semester  
Prerequisite: BO 124, 231.

**BO 315 • 4 credits**  
**Biology of Algae**

The freshwater and marine algae of the northeastern United States are surveyed with an emphasis on their taxonomic and ecological evolution. The laboratory focuses upon the identification, isolation and cultivation of algae collected during field trips. Extended field trips into Buzzards Bay and Vineyard Sound are an integral part of the course.  
Lecture 3 hours/Laboratory 4 hours  
Fall Semester  
Prerequisite: BO 121, 124.

**BO 316 • 3 credits**  
**Descriptive Oceanography**

An introduction to the field of oceanography. Physical, chemical, and ecological aspects are emphasized as to provide a basic foundation for further work in biological oceanography.  
Lecture 3 hours  
Fall Semester

**BO 317 • 4 credits**  
**Biology of Invertebrate Animals**

This course presents an intensive survey of the taxonomy, morphology and functioning of the major invertebrate phyla, with special reference to the adaptations of the intertidal marine invertebrates of the North Atlantic coast. Field trips to the diverse habitats of the area constitute an integral part of the laboratory. Several collecting trips will be held on weekends aboard the university research vessel in Buzzards Bay and Vineyard Sound.  
Lecture 3 hours/Laboratory 4 hours  
Fall Semester  
Prerequisite: BO 121, 124.

**BO 318 • 4 credits**  
**General Entomology**

This is an introductory survey course in the study of insects.

The taxonomy of families will be emphasized in lectures. Studies will also include the structure, habits, physiology and ecology of insects. During some laboratories, field trips will be conducted to collect and observe insects in their natural habitats.

**BO 321 • 4 credits**  
**General Microbiology**

This course explores the nature and diversity of microorganism. Special emphasis is placed on bacterial cytology, nutrition, physiology, and growth. Topics on the significance of microorganisms in the environment and the evolutionary relationships of microorganisms are included.  
Lecture 3 hours/Laboratory 4 hours  
Fall Semester  
Prerequisite: BO 121, 124, 234.

**BO 331 • 3 credits**  
**Advanced Genetics**

An historical perspective of the concepts leading to the present theory of gene structure and function is considered. The rigorous experimental evidence supporting this synthesis is reviewed by extensive reading and discussion of original publications. Particular emphasis is placed on the structure and function of the gene.  
Lecture 3 hours/Spring Semester  
Prerequisite: BO 321, 234.

**BO 350 • 4 credits**  
**Survey of Plant Kingdom**

The phylogenetic relationship among members of the plant kingdom will be studied with an emphasis on evolutionary trends among plant groups rather than on individual plant species.



Toward this goal the cytology, anatomy and morphology of plants from Monerans through the Angiosperms will be covered. Representatives of most groups will be studied in the laboratory and some will be observed in their natural habitats during two field trips.  
Lecture 3 hours/Laboratory and field trips 4 hours  
Prerequisite: One year of Biology of Organisms or equivalent.

**BO 370 • 4 credits**  
**General Physiology**

A study of the general principles of animal physiology integrating molecular, cellular, organ system and whole organism approaches. The accompanying laboratory will provide skill in the techniques used in animal physiological investigations.  
Lecture 3 hours/Laboratory 4 hours  
Prerequisite: Biology of Cells (or equivalent); Organic Chemistry.

**BO 406 • 3 credits**  
**Life in the Seas I**

Hydrography of the open seas, bays and estuaries with emphasis on inshore waters. The relationships of the chemical and physical environmental components and the plankton. (Not applicable for biology major credit.)  
Lectures will be scheduled aboard ship, in the field, and on campus.  
Prerequisite: Upper division or graduate standing or consent of instructor.

**BO 407 • 3 credits**  
**Life in the Seas II**

The natural history of larger marine animals and plants with emphasis on forms which are characteristic of inshore New England waters.  
Prerequisite: Upper division or graduate standing or consent of instructor.

**BO 409 • 3 credits**  
**Directed Study**

Terms and hours to be arranged. Readings and reports on special topics.

**BO 411 • 1-3 credits**  
**Proseminar: Current Topics in Biology**

Students with senior standing (or others with consent of the instructor) report on and discuss current biological problems as presented in principal journals, abstracts and reviews. The work of each seminar is usually built upon a single unifying content area.  
1-3 hours/Fall and Spring Semester

**BO 413 • 4 credits**  
**Biology of Fishes**

Field trips and extensive laboratory work are emphasized in this course. The life histories, ecology and classification of the fishes of the coastal and inland waters of the northeastern states are studied in detail.  
Lecture 2 hours/Laboratory 5 hours  
Fall Semester  
Prerequisite: Consent of instructor, junior or senior standing.

**BO 414 • 4 credits**  
**Comparative Physiology**

This course examines ways in which invertebrate and vertebrate animals solve problems imposed upon them by their environments. Problems of water balance, temperature, metabolism and behavior are stressed throughout.  
Lecture 2 hours/Laboratory 5 hours  
Spring Semester  
Prerequisite: Consent of instructor, BO 234 and CH 251.

**BO 416 • 1 credit**  
**Life in the Seas Laboratory I**

A laboratory designed to be taken concurrently with BO 406. Field experience will be emphasized. Many of the field trips will be held on weekends and holidays. Students enrolling in the course are expected to participate in field and shipboard activities which may be scheduled according to the state of the tide.

**BO 417 • 1 credit**  
**Life in the Seas Laboratory II**

A laboratory emphasizing field and shipboard experience. To be taken concurrently with BO 407.

**BO 421 • 4 credits**  
**Developmental Biology**

The molecular, cellular, anatomical and physiological aspects of reproduction, embryology, organogenesis and other developmental phenomena of animals are considered in the lecture. Some aspects of plant development are discussed. The laboratory combines anatomical and experimental studies.  
Lecture 3 hours/Laboratory 4 hours  
Fall and Spring Semesters  
Prerequisite: The Biology core, especially Biology of Cells.

**BO 424 • 4 credits**  
**Biology of Animal Parasites**

An introductory course in parasitology emphasizing major protozoan, helminth, and arthropod parasites of man, domestic animals, and fishes.  
Laboratory exercises include practical and experimental techniques.  
Lecture 3 hours/Laboratory 3 hours

**BO 428 • 3 credits**  
**Aquaculture**

The study of aquaculture in a global context with emphasis on a few selected forms to serve as

examples of working models. The course includes a consideration of theoretical and practical aspects of aquaculture. Field trips and occasional laboratory exercises supplement the course.

Lecture 3 hours

Prerequisite: Biology core program, Ecology and either Biology of Fish, Invertebrates, or Algae.

**BO 430 • 4 credits**  
**Design of Experiments in Biology**

Statistical concepts for the planning of experiments and the summarization of numerical data form the basis of this course. Lectures emphasize probability, testing of hypothesis and the application of different, statistical designs. Laboratories involve the practical application of statistical concepts and problems.  
Prerequisite: MA 101, 102 or equivalent upper division biology standing.

**BO 434 • 4 credits**  
**Plant Physiology**

Introductory course presenting topics about how plants function. Emphasis is placed on higher plants, but discussion of lower plants is also included. Topics include plant-soil water relations, transpiration, translocation, mineral nutrition, photosynthesis, hormones and growth regulators, differentiation and development, photomorphogenesis, flowering. Laboratory combines classical and modern research methods.  
Lecture 3 hours/Laboratory 4 hours  
Prerequisite: Biology core or consent of instructor.

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**BO 440 • 2 credits**  
**Research Project**

The advanced student selects a research project in his field of general interest and, under the supervision of an appropriate staff member, proceeds to independent research leading to the solution of that problem. The student should plan to devote an average of 4 hours per week to this research. Hours will be arranged.  
Fall and Spring Semester

**BO 441 • 2 credits**  
**Research Project**  
Continuation of BO 440

**BO 451 • 3 credits**  
**Environmental Health**

A study of the nature and effects of health hazards which are magnified or produced by human activity. Ionizing radiation, noise, organic and inorganic pollutants of air and water will be evaluated. Discussions will focus on the origins of stresses, their transmission to man, biological effects and methods of protection. Methods of measurement of stresses will be an integral part of the course. Some consideration will be given to economic, political and sociological implications of the controls of stresses. The course format will encourage student participation in the discussion of environmental problems. Students will be expected to investigate etiological agents such as radionuclides, heavy metals, pesticides, herbicides or industrial products and by-products.  
Prerequisite: Upper division or graduate standing or consent of instructor.

**BO 454 • 3 credits**  
**Biology of Sharks**

The morphology, physiology, behavior and evolutionary history of

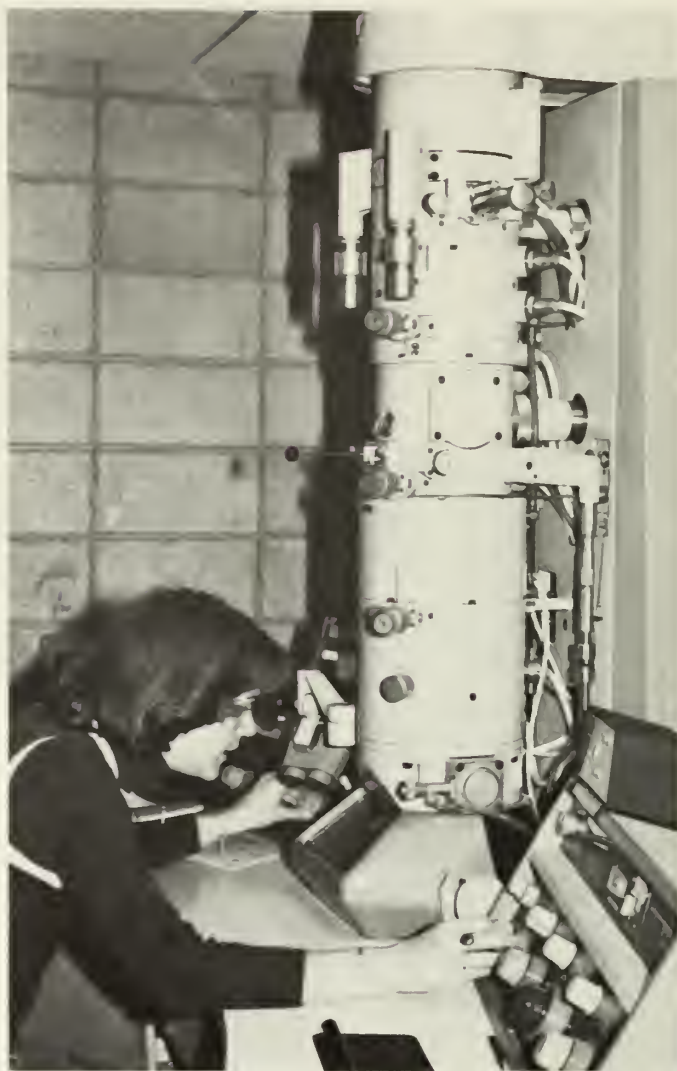
the most ancient group of living jawed fishes will be considered in this course. The most unusual aspects of these fish, such as modes of reproduction, osmotic regulation, feeding mechanisms and sensory physiology, will be stressed throughout. The course will include lectures, discussions, laboratory work and field trips.  
Prerequisite: Permission of instructor

**BO 460 • 4 credits**  
**Biological Transmission**  
**Electron Microscopy: Introduction to Techniques**

The course will introduce students to the theory and techniques employed in transmission electron microscopy. The student will fix, embed, section, and examine biological specimens with the electron microscope. The necessary darkroom procedures will also be taught. Each student will be expected to present their findings in the form of a written report at the end of the semester.  
Lecture 1 hour/Laboratory 6 hours

**BO 470 4 credits**  
**Introductory Mycology**

The course introduces the student to the taxonomy and the biochemical activities of the fungi. The laboratory exercises involve the isolation, identification, and physiological characterization of some of the commonly encountered marine and terrestrial fungi.  
Lectures 3 hours/Laboratory 3 hours



**BO 471 • 4 credits****Marine Microbiology**

This course will deal with the taxonomy, physiology, and the role of heterotrophic microorganisms in the marine environment. The viruses will also be considered. Emphasis will be placed on the activities of the viruses, bacteria, and the fungi in the marine environment. In the laboratory, exercises will be conducted on the methods of enumeration, detection of selected physiological groups, uptake and depuration of microorganisms by shellfish, marine biodeterioration, and the influence of environmental parameters on the growth and activities of marine microorganisms.

Lectures 3 hours/Laboratory 4 hours  
Spring Semester

**BO 479 • 2 credits****Developmental Biology of Marine Animals**

Descriptive and experimental embryology of invertebrates and fish.

Offered in the late spring and early summer, alternate years.

**BO 495 • 3 credits****Independent Study**

Terms and hours to be arranged. Readings and reports on special topics.

**BO 496 • 3 credits****Directed Study**

Terms and hours to be arranged. Readings and reports on special topics.

**BO 509 • 1-3 credits****Directed Study in Biology**

Terms and hours to be arranged. Readings and reports on special topics.

**BO 511 • 1-3 credits****Graduate Seminar in Biology**

Student discussions of selected

topics will be carried out under the supervision of a faculty member. Topics to be announced in advance of seminar.

Fall and Spring Semester

Prerequisite: Graduate standing or consent of instructor.

**BO 517 • 4 credits****Advanced Biology of Invertebrate Animals**

An advanced treatment of the taxonomy, morphology and function of invertebrate animals.

Lecture 3 hours/Laboratory 4 hours

Prerequisite: Graduate standing or consent of instructor.

**BO 520 • 3 credits****Animal Behavior**

Comparative and evolutionary aspects of behavior of invertebrate and vertebrate animals are studied. Structure and function of nervous systems, simple behavioral patterns including reflexes and other forms of innate behavior as well as more complex patterns including learning and social behavior are stressed.

Lecture 3 hours/Fall and Spring Semester

Prerequisite: Senior or graduate standing and consent of instructor.

**BO 522 • 4 credits****Experimental Embryology**

Reviews current concepts of development. The laboratory investigates classical and recent experiments and encourages individual projects in plant and animal development.

Lecture 2 hours/Laboratory 6 hours

Prerequisite: Developmental Biology or consent of instructor.

**BO 525 • 1 credit****Graduate Student Seminar**

This course offers an opportunity for all graduate students to present a seminar to their peers

and faculty at the graduate level. A different theme for the seminar will be used each term but generally students will choose a topic, search current literature, compile a working bibliography, and give an oral presentation. Each student (and attendant faculty) will write a brief evaluation to be given to the speakers following their presentation. This course is required of all graduate students. Two graduate Student Seminar credits are allowable toward the Master's degree.

Prerequisite: Graduate status.

**BO 531 • 4 credits****Advanced Ichthyology**

Advanced ichthyology deals with studies of fish phylogeny and classification, physiological problems peculiarly faced by fish, and aspects of fisheries hydrography. The laboratory stresses independent work on the age growth structure of fish populations as well as the measurement of physiological parameters. Student participation in seminars is required.

Lecture 3 hours/Laboratory 3 hours

Prerequisite: Graduate standing or consent of instructor.

**BO 545 • 4 credits****Biological Oceanography**

The cycle of productivity in the marine environment is emphasized and the physiological and morphological adaptations of plant, animal and bacterial populations within various oceanic regions are considered. Interrelationships of the plankton, the nekton and the benthos are stressed.

Lecture 3 hours/Laboratory 2 hours

**BO 576 • 4 credits****Biology of Diatoms**

An introduction to the taxonomy,

systematics and ecology of diatoms leading to the analysis of diatom assemblages in fresh water, estuarine and marine ecosystems. Topics to be examined include the collection and preparation of samples, the literature on diatom taxonomy, counting procedures and applicable statistical analyses, microscopic examination including inverted microscopy and scanning electron microscopy, and the literature on diatom ecology with special attention to the use of diatoms and their assemblages as environmental quality indicators.

Lecture 3 hours/Laboratory 4 hours

**BO 590****Directed Study****BO 593 • 1-3 credits****Graduate Research Project**

Directed research for graduate students. Hours by arrangement. Spring and Fall Semester  
Prerequisite: Graduate standing or consent of instructor.

**BO 595****Independent Study****BO 599 • Not to exceed 10 credits****Graduate Thesis****BO 900****Contract Learning**



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## Faculty and Fields of Interest

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**Dwight Baker** • plant tissue metabolism

**Alan Bates** • inorganic and organometallic chemistry

**Russell Bessette** • electro-analytical chemistry and chemical instrumentation.

**Louis Fenaux** • analytical chemistry

**John Fenton** • enzyme inhibition and clinical chemistry

**Ferdinand Fiocchi** • inorganic chemistry

**Robert Hooper** • coordination chemistry

**Dwight Mowery** • organic and carbohydrate chemistry

**Timothy Su** • physical chemistry, ion-molecule reactions, polymer science

**George Thomas, Jr.**, (chairperson) • physical chemistry, molecular biophysics and spectroscopy

**Ralph Tykodi** • equilibrium and non-equilibrium thermodynamics

**Claude Wagner** • geochemistry

**Margaret Wechter** • analytical radiochemistry

**Chang-ning Wu** • selective aromatic substitution and electro-organic synthesis

**Phillip Zoretic** • development of synthetic methods, natural product synthesis and the synthesis of biologically active compounds

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## Chemistry Major

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The program for chemistry majors is designed to provide a solid foundation in the theoretical knowledge and practical laboratory skills necessary for a variety of professional careers. The basic program prepares students for industrial research, graduate study, medical school, secondary school or junior college teaching, technical sales, or technical writing. If the student intends to apply for admission to medical school, he should include appropriate biology courses among his electives. A student may also enroll in a program (Chemistry and Education) leading toward a bachelors degree in chemistry and certification for teaching chemistry in secondary schools.

Superior students who plan to do graduate work will be interested in the new integrated

B.S.-M.S. degree program in chemistry. By utilizing summer courses, students can complete requirements for both degrees within four calendar years. Applicants whose credentials indicate the ability to succeed in this highly demanding year-round program will be granted provisional acceptance. Departmental approval must be obtained prior to the middle of the second year of study, and final acceptance is determined by the Graduate Council prior to the beginning of the fourth year







## Requirements

First Year			Semester Credits:	First	Second
CH	151	152	Principles of Modern Chemistry	3	3
CH	165	166	Introduction to Experimentation	2	2
MA	111	112	Analytic Geometry and Calculus I and II	4	4
E	101	102	Freshman English	3	3
			Humanities or Social Sciences	3	3
				15	15

Second Year			Semester Credits:	First	Second
CH	251	252	Organic Chemistry	3	3
CH	265	266	Organic Chemistry Laboratory	2	2
MA	211		Analytic Geometry and Calculus III	4	
MA	212		Differential Equations		3
PH	111	112	Physics I, II	3	3
PH	121	122	Physics Laboratory (biweekly)	1	1
			English Language Literature	3	3
				16	15

Third Year			Semester Credits:	First	Second
CH	305		Modern Methods of Chemical Analysis	3	
CH	307		Procedures of Chemical Analysis	2	
CH	315	316	Physical Chemistry I, II	4	4
CH	318		Physical Chemical Measurements I		2
PH	211		Physics III	3	
PH	221		Physics Laboratory (biweekly)	1	
			Electives	3	9
				16	15

Fourth Year			Semester Credits:	First	Second
CH	317		Physical Chemistry III	3	
CH	319		Physical Chemical Measurements II	2	
			Humanities or Social Sciences	3	3
			Electives	6	12
				14	15

### Chemistry Electives

CH	320	Computer Programming In Chemistry
CH	352	Organic Preparations
CH	362	Introduction to Biochemistry
CH	421	Organic Mechanism
CH	431	Principles of Inorganic Chemistry
CH	432	Organic Analysis
CH	442	Applied Spectroscopy
CH	491	492 Introduction to Research
Graduate (500 level) Courses are open to very capable students with permission of the instructor and advisor		

The electives must include 6 credits in courses not related to science, mathematics or engineering, 6 credits in chemistry courses and 3 credits in mathematics, applied mathematics, science, or CH 320. It is strongly recommended that two semesters of German be elected if graduate work in chemistry is contemplated. Students who wish to be certified by the American Chemical Society must include among their electives CH 431 and at least two of the following courses: CH 352, CH 432, CH 491, CH 517, CH 519, CH 552

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## Chemistry Courses

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### **CH 101 • 3 credits** **General Chemistry I**

An introduction to the fundamental chemical laws and theories covering inorganic and organic chemistry with some descriptive chemistry. For non-science majors, nurses and textile technologists. Lecture 4 hours.

### **CH 102 • 3 credits** **General Chemistry II**

Continuation of CH 101. Lecture 4 hours. Prerequisite: CH 101

### **CH 103 • 1 credit** **General Chemistry Laboratory I**

An introduction to chemical laboratory techniques and methods including measurements and demonstrations of chemical principles. Laboratory 2 hours. Corequisite: CH 101

### **CH 104 • 1 credit** **General Chemistry Laboratory II**

Continuation of CH 103. Laboratory 2 hours. Prerequisites: CH 101, 103 Corequisite: CH 102

### **CH 130 • 3 credits** **Chemistry and the Environment**

Available to anyone in the University, this course provides substantial treatment, with demonstrations, of the chemistry involved in consumer concerns (food additives, medicines, detergents, etc.), air and water pollution, elementary biochemistry, and the general question of power generation and utilization (fuel cells, solar energy conversion, nuclear energy, etc.). Credit applies to the College of Arts and Sciences science requirement. No knowledge of chemistry is assumed, but it is

hoped the student will have had high school chemistry or its equivalent. Lecture 3 hours.

### **CH 151 • 3 credits** **Principles of Modern Chemistry I**

An introduction to the basic physical and chemical principles pertaining to the structure of chemical species and to the nature, extent, and rates of chemical reactions. The details of atomic and molecular structure, the phenomenon of chemical periodicity, and the characteristics of equilibrium systems are emphasized and discussed in the light of modern theories. Lecture and recitation 4 hours.

### **CH 152 • 3 credits** **Principles of Modern Chemistry II**

Continuation of CH 151. Lecture and recitation 4 hours. Prerequisite: CH 151

### **CH 163 • 2 credits** **Quantitative Chemistry I**

The theory and practice of volumetric and gravimetric analysis followed by an introduction to instrumental analysis including the principles and use of the colorimeter, absorption instruments, and pH measurements. This course is designed for students with professional objectives in biology and medical technology. Lecture 1 hour/laboratory 4 hours.

### **CH 164 • 2 credits** **Quantitative Chemistry II**

Continuation of CH 163. Lecture 1 hour/laboratory 4 hours. Prerequisite: CH 163

### **CH 165 • 2 credits** **Introduction to Experimentation I**

An introduction to the basic techniques, methods and theory of chemical experimentation, and the recording, analysis, interpretation and reporting of experimental results, based on qualitative and quantitative chemical procedures. Skills, of professional quality, needed to use apparatus for the accurate measurement of mass, volume, color intensity, refractive index, electrical energy, etc. will be developed. Laboratory 6 hours.

### **CH 166 • 2 credits** **Introduction to Experimentation II**

Continuation of Ch 165. Laboratory 6 hours. Prerequisite: CH 165.

### **CH 222 • 3 credits** **Organic and Biological Chemistry**

A one semester introduction to biological chemistry for students not majoring in chemistry with emphasis on nutritional and medical applications. Lecture 3 hours. Prerequisite: CH 102 or equivalent

### **CH 224 • 1 credit** **Bio-Organic Laboratory**

A one semester introduction to the fundamental laboratory operations used in investigations in organic and biological chemistry. No previous laboratory experience is required. Laboratory 3 hours. Prerequisite: CH 102 or equivalent Corequisite: CH 222

### **CH 251 • 3 credits** **Organic Chemistry I**

A survey of the chemistry of carbon compounds and introduc-

tion to the basic principles of organic chemistry.  
Lecture 3 hours.  
Prerequisite: CH 152

**CH 252 • 3 credits**  
**Organic Chemistry II**  
Continuation of CH 251.  
Lecture 3 hours.  
Prerequisite: CH 251

**CH 265 • 2 credits**  
**Organic Chemistry Laboratory I**  
The synthesis of organic compounds and an introduction to the organic methods of separation, purification and identification. This course is coordinated with CH 251.  
Laboratory 3 hours/Lecture 1 hour.  
Prerequisite: CH 152 and CH 166 or CH 164  
Corequisite: CH 251

**CH 266 • 2 credits**  
**Organic Chemistry Laboratory II**  
Continuation of CH 265.  
Laboratory 3 hours/Lecture 1 hour.  
Prerequisite: CH 251 and 265  
Corequisite: CH 252

**CH 305 • 3 credits**  
**Modern Methods of Chemical Analysis**  
Introduction to chemical and instrumental analytical techniques. The theory of neutralization reactions in aqueous and nonaqueous systems. Oxidation-reduction and complex formation equilibria. Basic theory of electronic circuitry. Separation principles involving phase changes, solvent extraction and the various types of chromatography. Introduction to electrochemical, potentiometric and spectrophotometric measure-

ments. The statistical treatment of analytical data.  
Lecture 3 hours.  
Prerequisites: CH 252, 266 and CH 164 or 166  
Corequisite: CH 315

**CH 307 • 2 credits**  
**Procedures of Chemical Analysis**  
Laboratory experimentation designed to develop the techniques and illustrate applications of analytical procedures to the solution of chemical problems. Laboratory coordinated with CH 305.  
Laboratory 4 hours/Lecture 1 hour.  
Corequisite: CH 305

**CH 315 • 4 credits**  
**Physical Chemistry I**  
An introduction to the theoretical principles underlying chemical phenomena: applications of thermodynamics to chemical phenomena, chemical kinetics, transport processes in gases and liquids.  
Lecture 3 hours/recitation 1 hour.  
Prerequisites: CH 152, MA 212, two semesters of college physics.

**CH 316 • 4 credits**  
**Physical Chemistry II**  
Continuation of CH 315.  
Lecture 3 hours/recitation 1 hour.  
Prerequisite: CH 315

**CH 317 • 3 credits**  
**Physical Chemistry III**  
Continuation of Physical Chemistry II, with emphasis on theoretical physical chemistry, including topics in wave mechanics, atomic structure, molecular structure, spectroscopy and statistical thermodynamics.  
Lecture 3 hours.  
Prerequisite: CH 316

**CH 318 • 2 credits**  
**Physical Chemical Measurements I**  
Experiments in physical chemistry designed to test established theoretical principles which have been introduced in CH 315, 316 and 317. The experiments provide the student with basic experience in obtaining precise physical measurements of important chemical interest.  
Laboratory 4 hours/Lecture 1 hour.  
Prerequisites: CH 305-7, CH 315  
Corequisite: CH 316

**CH 319 • 2 credits**  
**Physical Chemical Measurements II**  
Continuation of CH 318.  
Laboratory 4 hours/lecture 1 hour.  
Prerequisites: CH 305-7, CH 316  
Corequisite: CH 317

**CH 320 • 3 credits**  
**Computer Programming in Chemistry**  
An introduction to FORTRAN IV computer logic. Application of computer programming to general chemistry problems, thermodynamic problems, organic synthesis, simple chemical kinetics and spectroscopy - IR, NMR, mass spectrometry. Polynomial regression. Exponential function fit. Treatment of experimental data. Numerical integration. Solution of differential equations. Solving simultaneous equations - iteration technique. Use of scientific subroutine package.  
Prerequisite (or corequisite) MA 212.  
This course may not be taken for credit by students who have received credit for CS 261.

**CH 352 • 3 credits**  
**Organic Preparations**  
A study of the more intricate syn-

thetic procedures of organic chemistry including use of the literature for choice of optimum methods.  
Lecture 1 hour/Laboratory 5 hours.  
Prerequisites: CH 252 and CH 266

**CH 362 • 3 credits**  
**Introduction to Biochemistry**

An introduction to the chemical properties of compounds of a biological interest: energetics and enzymology. A survey of the metabolism of proteins, carbohydrates, lipids, nucleic acids and other bio-substances.  
Lecture 3 hours.  
Prerequisite: CH 252

**CH 421 • 3 credits**  
**Organic Mechanism**

A study of the structure and reactions of organic molecules

using molecular orbital and resonance theories.  
Lecture 3 hours.  
Prerequisite: CH 252  
Prerequisite or Corequisite: CH 315

**CH 425 • 3 credits**  
**Polymer Science and Technology**

The molecular structure and physical and chemical properties of polymers. Industrial aspects of polymers will be stressed and an attempt made to bridge the gap between theoretical and practical consideration in polymer science.  
Lecture 3 hours  
Prerequisites: CH 316, MA 212, PH 112

**CH 431 • 3 credits**  
**Principles of Inorganic Chemistry**

The application of physical chemical principles to inorganic systems. Discussions of the chemistry of the representative elements utilizing thermodynamic principles and the modern theories of bonding and structure. Introduction to coordination chemistry.  
Lecture 3 hours  
Prerequisite: CH 316

**CH 432 • 3 credits**  
**Organic Analysis**

Quantitative elemental and group determination on a microscale followed by a study of the systematic identification of organic compounds. Extensive laboratory work on unknowns is required.  
Lecture 2 hours/laboratory 4 hours.  
Prerequisites: CH 252, CH 266, CH 305-307

**CH 442 • 3 credits**  
**Applied Spectroscopy**

A study of spectroscopic methods of determination of structure of organic compounds, esp. infrared, ultra-violet, visible, nuclear magnetic resonance, and mass spectroscopy, with extensive applications to individual cases.  
Lecture 3 hours  
Prerequisites: CH 252, CH 266

**CH 491 • 3 to 6 credits**  
**Introduction to Research I**

Chemistry majors who are doing well in formal course work and who have indicated research potential are encouraged to undertake an original investigation under the direction of a member of the chemistry faculty.  
Laboratory 9 to 18 hours.  
Prerequisite: Departmental permission





**CH 492 • 3 to 6 credits**  
**Introduction to Research II**  
Continuation of CH 491.  
Laboratory 9 to 18 hours

**CH 510 • 3 credits**  
**Advanced Organic Chemistry**  
A study of mechanisms and stereochemical aspects of chemical reactions including a consideration of chemical kinetics and reactivity in terms of modern bonding theory and structural concepts.  
Lecture 3 hours; offered alternate years.  
Prerequisite: CH 421  
Corequisite: CH 316

**CH 513 • 3 credits**  
**Advanced Biochemistry I**  
A detailed study of the physical chemistry of biomacromolecules; of the thermodynamics, kinetics and mechanisms of enzyme reactions.  
Seminar 3 hours; offered alternate years.  
Prerequisites: CH 361 and CH 316

**CH 515 • 3 credits**  
**Advanced Biochemistry II**  
A detailed study of the intermediary metabolism of the major classes of chemical substances and selected topics of molecular biology.  
Seminar 3 hours; offered alternate years.  
Prerequisites: CH 361 and CH 316

**CH 517 • 1 credit**  
**Advanced Biochemical Laboratory I**  
This course, together with CH 519, introduces the student to a wide variety of biochemical techniques and methods used in biochemical research. Many of the experiments are quantitative and include quantitative separation, characterization and identification of molecules,

large and small, by chemical and physical methods. Where possible, marine organisms are used as sources of biological materials. The experiments vary greatly in difficulty and are selected to fit the student's background, interest and experimental competence.  
Laboratory 4 hours; offered each fall term.  
Prerequisite: CH 361

**CH 519 • 1 credit**  
**Advanced Biochemical Laboratory II**  
A continuation of CH 517.  
Laboratory 4 hours; offered each fall term.  
Prerequisite: CH 517

**CH 520 • 3 credits**  
**Advanced Inorganic Chemistry**  
An advanced treatment of the structure and reactivity of inorganic materials. Major emphasis is on molecular orbital theory, the ligand field theory of transition metal complexes, and the kinetics and mechanisms of inorganic reactions.  
Lecture 3 hours; offered spring term, alternate years.  
Prerequisites: CH 317 and CH 431

**CH 523 • 3 credits**  
**Thermodynamics**  
Development of the general thermodynamic theory from the first and second laws and application to homogenous and heterogeneous reaction systems.  
Lecture 3 hours; offered fall term, alternate years.  
Prerequisite: CH 316

**CH 531 • 3 credits**  
**Chemical Kinetics**  
Principles and selected topics, including analysis of reaction rates, kinetic and transition-state theories, reactions in gas

and liquid phases, unimolecular reactions, fast reactions and enzyme kinetics.  
Lecture 3 hours.  
Prerequisite: CH 316

**CH 533 • 3 credits**  
**Statistical Mechanics**  
Introduction to the principles and methods of statistical mechanics. Classical and quantum partition functions will be applied to the calculation of thermodynamic properties.  
Lecture 3 hours; offered fall term, alternate years.  
Prerequisite: CH 317

**CH 542 • 3 credits**  
**Quantum Chemistry**  
Fundamental concepts of quantum mechanics: wave properties, Schrodinger equation, operators. Basic applications to free particles, harmonic oscillator, hydrogen atom. Perturbation theory and variation method. Applications to many-electron systems and time-dependent problems.  
Lecture 3 hours; offered spring term, alternate years.  
Prerequisite: CH 317

**CH 550 • 3 credits**  
**Special Topics in Chemistry**  
An advanced treatment of special topics in chemistry with an emphasis on recent developments. The subject matter may vary from year to year.  
Prerequisite: Permission of the instructor.

**CH 551 • 3 credits**  
**Electrochemistry**  
The development of the fundamental mathematical relationships upon which electrochemical methods are based. The interpretation of the kinetics of electrode reactions and the transfer of material to and from electrodes under various conditions. The interpretation of data

of direct analytical significance generated by the methods and techniques of modern electrochemistry

Lecture 3 hours

Prerequisite: CH 316

**CH 552 • 3 credits**  
**Instrumental Methods of Analysis**

The theory and practice of modern analyses utilizing optical and electrochemical instrumentation in the solution of chemical problems. Topics discussed include ultra-violet and visible spectrophotometry; fluorimetry; flame emission and atomic absorption photometry; thermo-analytical methods; mass spectrometry; analytical applications of nuclear magnetic resonance; voltammetry including polarographic, amperometric, and coulometric methods of analysis. Lecture 2 hours/laboratory 3 hours; offered each spring term

Prerequisites: CH 305-307, CH 316

**CH 554 • 3 credits**  
**Molecular Spectra and Molecular Structure**

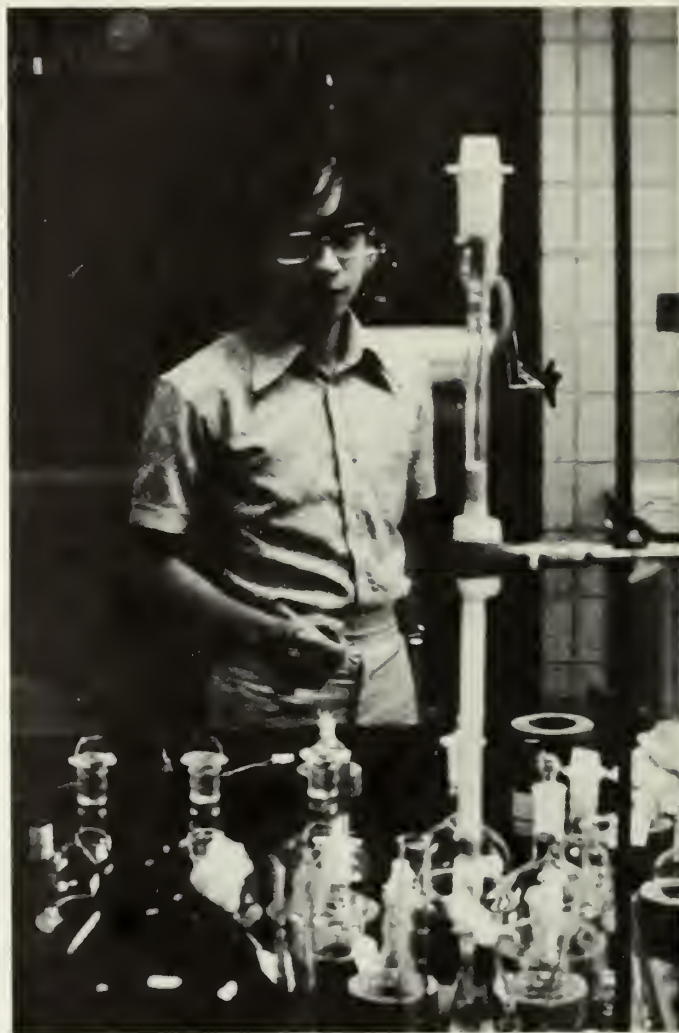
Discussion of basic principles of molecular spectroscopy; rotational, vibrational and electronic spectra; transition moments and selection rules. Use of spectra to find dissociation energies, force constants, interatomic distances, molecular symmetry and related quantities. Applications to real molecules in conjunction with other techniques for study of molecular structure.

Lecture 3 hours; offered spring term, alternate years.

Prerequisite: CH 317

**CH 600 • 3 to 6 credits**  
**Dissertation Research**

Consists of original chemical research and the preparation of a thesis under the direction of a member of the chemistry faculty. This is required for the Master of Science degree in Chemistry  
Prerequisite: Departmental permission.



## Faculty and Fields of Interest

**David E. Berger** • labor and regional economics

**Howard A. Bridgman** • international and labor economics

**Frances F. Esposito** • industrial organization and control

**Caleb A. Smith (chairperson)** • economics of energy and the environment

## Economics Major

The SMU economics department is especially interested in urban and regional problems with a focus on the Southeastern Massachusetts area. Economics is a preferred major for entrance into graduate schools of business and an ideal background for training in those fields of law which combine legal and economic matters.

A major in economics, supplemented by courses in political science and the required courses for high school teaching, provides strong preparation for teaching social studies.

For recommendation for graduate work in economics students

need to meet the requirements for honors in economics and take at least 12 hours in mathematics selected from the following: MA 111, 112, 211, 212, 221, 341, 4T1, 4T2.

## Requirements

For B.A. in Economics			Semester Credits	First	Second
EC 280	Basic Economic Statistics				3
EC 301	Price Theory and Policy				3
EC 311	Employment and Income Theory				3
	Economic electives at 400 level				6
	at 300 level				3
	at any level				3
					<hr/> 30

## For B.A. in Economics with honors

EC 280	Basic Economic Statistics				3
EC 301	Price Theory and Policy				3
EC 306	Topics in Mathematical Economics				3
EC 311	Employment and Income Theory				3
EC 312	Economic Growth and Stabilization				3
EC 332	Fundamentals of Quantitative Economics				3
EC 416	History of Economic Thought				3
	Economics electives at 400 level				6
	at 300 or 400 level				6
	at any level				3
					<hr/> 39

A grade point average of at least 3.2 in all courses taken in Economics is required for the degree with honors.

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## Economics Courses

### **EC 103 • 3 credits**

#### **Cities, Minorities and Poverty**

Review and analysis of major social problems faced by cities; emphasis on origin, causes and possible solutions for poverty and minority problems.

Freshman and upperclass elective.

### **EC 104 • 3 credits**

#### **Regional Growth and Stagnation**

Analysis of the determinants of regional growth with applications to Southeastern Massachusetts.

Freshman and upperclass elective.

### **EC 105 • 3 credits**

#### **Economic Development**

The meaning of economic development. The interaction of economic, social and cultural forces in development. Widely different time periods will be considered.

Freshman and upperclass elective.

### **EC 107 • 3 credits**

#### **Economics of Pollution**

Economic approaches to solutions of the pollution problem; the economics of the environment and of self-contained ecosystems.

Freshman and upperclass elective.

### **EC 109 • 3 credits**

#### **International Economics**

An introduction to the world economy. The balance of payments and supply and demand for foreign exchange. The changing role of the dollar. Transnational corporations and their control. Rich vs. poor countries. Comparative advantage and specialization. The functions of the IMF, GATT and UNCTAD. The European Community.

Freshman and upperclass elective.

### **EC 111 • 3 credits**

#### **Jobs, Employment and Income**

Basic analysis of problems of economic growth, job creation and unemployment; structure of work and jobs will be explored, along with current issues surrounding the government's impact on inflation, taxation and economic planning.

Freshman and upperclass elective.

### **EC 231 • 3 credits**

#### **Economics I**

Survey of American economy: its efficiency in allocating resources; price determination in product and resource markets under competition and monopoly; public policy on industrial concentration, agriculture, unions and income inequality. Prerequisite for all 300 and 400 level courses.

Sophomore and upperclass elective. Freshman with permission of instructor.

### **EC 232 • 3 credits**

#### **Economics II**

Survey of American economy: determination of GNP and National income; full employment, inflation, economic growth; money, banking and the Federal Reserve System; international trade and balance of payments; less developed economies.

Sophomore and upperclass elective.

Prerequisite: EC 231 or permission of instructor.

### **EC 280 • 3 credits**

#### **Basic Economic Statistics**

Topics include descriptive and inferential statistics, measures of central tendency, measures of dispersion, confidence interval estimation, hypothesis testing, bivariate linear regression, time series and index numbers.

Sophomore and upperclass

elective, an economics major is required to take EC 280 or EC 332. Course is open to students without prior statistical training and those non-economics majors whose major field requires no statistical training.

### **EC 301 • 3 credits**

#### **Price Theory and Policy**

The theory of price determination, resource allocation and income distribution is integrated with consideration of public policy questions.

Sophomore and upperclass elective.

Required in economics major.

Prerequisite: EC 231

### **EC 304 • 3 credits**

#### **Industrial Organization and Antitrust Policy**

Development of antitrust policy in the U. S. Discussion of tying arrangements, vertical integration, price discrimination, mergers and patents. Theoretical and empirical discussion of barriers to new competition in American industries.

A Sophomore and upperclass elective.

Prerequisite: EC 301 or permission of instructor.

### **EC 306 • 3 credits**

#### **Topics in Mathematical Economics**

Mathematical techniques applied to economic analysis. Topics include decision making under uncertainty, inter-temporal decision making, dynamic models of economic behavior, and current research of instructor.

Required in economics honors major.

Upperclass elective.

Prerequisite: EC 280, MA 111, MA 112.



**EC 311 • 3 credits**  
**Employment and Income Theory**

Theories of employment and income determination; the impact of government actions to stabilize economic activity in a market economy. Upperclass elective. Required in economics major. Prerequisite: EC 232 or permission of instructor.

**EC 312 • 3 credits**  
**Economic Growth and Stabilization**

Problems and policies in economic growth, the impact of government taxing, spending and monetary policies on economic stability; problems of inflation, debt management and international monetary stability. Upperclass elective. Required in economics honors major. Prerequisite: EC 311

**EC 331 • 3 credits**  
**Economics of Developing Countries**

Scenarios integrating social and economic goals. Two-gap models and real transfers; poverty; The World Employment Program and the New International Economic Order. Multilateral organizations including the UN, UNCTAD, UNDP and the ILP. Control of transnational corporations. Multilateral vs. bilateral aid. Commodity indexation, buffer stocks and changing terms of trade. Upperclass elective. Prerequisite: EC 232

**EC 332 • 3 credits**  
**Fundamentals of Quantitative Economics**

Introduction to econometrics including development of basic techniques of bivariate and multivariate linear regression analysis; use of lagged variables and dummy variables in model building; problems of multicollinearity, auto-correlation and heteroscedasticity. Sophomore and upperclass elective. EC 280 or EC 332 is required for an economics major. EC 332 is required for economics honors major. Prerequisite: EC 232, EC 280 (or MA 231 and MA 232) or permission of instructor.

**EC 342 • 3 credits**  
**Labor Economics**

The labor force. Wages in competitive and non-competitive markets. Wage structures. Inequalities and discrimination. Impacts of unions and social standards. Indexation, inflation and unemployment. Sophomore and upperclass elective. Prerequisite: EC 232

**EC 352 • 3 credits**  
**Economics and Technology**  
The interaction of economics and technology in history. Invention and economic feasibility as forces in technological change. Sophomore and upperclass elective. Prerequisite: EC 232

**EC 416 • 3 credits**  
**History of Economic Thought**  
The development of economic thought with emphasis on the emergence of neoclassical economics and subsequent developments. An upperclass elective. Required in economics honors major. Prerequisite: EC 301

**EC 431 • 3 credits**  
**International Trade**  
Measuring the balance of payments and the terms of trade. The general equilibrium of trade, interest rates and GNP with growth at full employment. Financial markets, international money and the role of the United States. The New International Economic Order and the Third World. Transnational corporations. Multilateral organizations. Comparative advantage and welfare economics. Tariff reduction vs. the new protectionism. The European Community and regionalism. The race for technology. Indexation of raw materials and buffer stocks. Upperclass elective. Prerequisite: EC 232

**EC 432 • 3 credits**  
**Public Finance**  
Theoretical underpinnings of modern public finance, incidence and distortions of major tax instruments, economics of program evaluation. Upperclass elective. Prerequisite: EC 301 or permission of instructor.

**EC 451 • 3 credits**  
**Problems in Regional Growth**  
Analysis of regional growth and stagnation with special emphasis on New England. Development strategies and programs will be explored. Upperclass elective. Prerequisite: EC 232 or permission of instructor.

**EC 452 • 3 credits**  
**Manpower and Regional Development**  
Review of labor market problems and programs in growing and depressed regions, with special emphasis on New England. Attention

focused on the impact of education, training and government manpower programs. Upperclass elective. Prerequisite: EC 232 or permission of instructor.

**EC 453 • 3 credits**  
**Work, Jobs and Income**  
Study of changes in the labor force, the impact of labor market processes and how they effect work motivation, job performance and income distribution. Upperclass elective. Prerequisite: EC 232 or permission of instructor.

**EC 461 • 3 credits**  
**Urban Economics**  
The economy of cities, intra-urban utilization of space, the economics of urban problems and policies. Upperclass elective. Prerequisite: EC 301

**EC 501 • 3 credits**  
**Theory of the Household and the Firm**  
Analytical development of the following topics: the theory of utility and preference and consumer behavior, the theory of production (one and two variable inputs) and cost, the theory of the firm (perfect competition, monopolistic competition, oligopoly and monopoly), the theory of distribution and the theory of general equilibrium. For graduate students.

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## Faculty and Fields of Interest

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**Hamilton Brush** • arts of language and communication instruction, elementary and secondary school education methods; supervision; group facilitation, English linguistics, literature and composition

**Walter Cass** • philosophical, historical, and psychological foundations of education; group dynamics and interpersonal relations; adult education; methods of language instruction

**Catherine Downey** • elementary education, psychology; creative aspects of teaching; student teaching

**Patrick Foley** • social foundations of education; consumer education

**Cynthia Kruger, (chairperson)** • curriculum development (K-12); training teachers; behavioral objectives - needs assessment, model building; bilingual education curriculum

**Robert O'Hara** • vocational psychology, measurement and evaluation, educational psychology

**John O'Neill** • administration of secondary school and colleges; history and philosophy of education

**William Philbrick** • the spectrum of special education for children with special needs

**William Rotundi** • counseling and psychotherapy: individual and group

**Lawrence Singleton** • tests and measurements; educational research; evaluative research

**Doris Thibault** • reading; mathematics; individualized instruction; elementary education; curriculum development — elementary

**Milton Young** • transpersonal education; life-long personal growth; humanistic education; in-service education; innovations and change



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### Statement of Purpose

By means of course work, field experiences, and close student-faculty cooperation, the SMU Education Department encourages students to desire to become dedicated, innovative

teachers and to understand and appreciate the problems and potential of the American education system, with a view to their becoming more effective citizens and parents in our society. In the

process of achieving this purpose, students who elect the complete program become eligible for teacher certification in the Commonwealth of Massachusetts and in most other states.

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### Department Philosophy

The SMU Education Department believes that good teachers are essential role models for children in the on-going development of a dynamic democratic society. For this reason, the Department encourages students to become proficient in the various important teaching technologies and, also, to become as open and self-actualizing as their personalities allow. In keeping with this aim, the members of the Education Department faculty attempt to share and develop with students an enthusiastic interest in educational research and its findings while also demonstrating in

action the importance the Department places on the democratic process, the scientific method, cooperative interpersonal relationships, and aesthetic values. The Department realizes that its philosophy is really a matrix of goals which are seldom perfectly achieved in human experience. In recognition of this fact, and in keeping with the meaning of the goals themselves, the Department encourages a continuous evaluation of its work by students and faculty members.

At the secondary level, focus is upon mastering an academic discipline to be taught while of-

fering those professional education courses which contribute to a distinctively substantive and liberalizing dimension.

At the elementary level, focus is upon gaining a perspective of the role of the elementary school in American education, particularly in the southeastern Massachusetts region; plus learning and practicing specific methods of elementary-school teaching and classroom management which reflect the values of both traditional and more recent trends in elementary education.

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### Requirements: Secondary Level

Second Year		Semester Credits:
Select One		
ED 201	Philosophy of Education	3
ED 210	History of Education	3
ED 409	Sociology of Education	3
Select One		
ED 205	Human Development and Learning	3
PY 301	Adolescent Psychology	3
Third Year		
ED 306	Curriculum Development in the Secondary School	3
ED 307	Teaching Methodology in the Secondary School	3
Fourth Year		
ED 415	Teaching Internship Secondary	12
ED 417	Education Workshop in Secondary Teaching (Concurrent with ED 415)	3
ED 410	Tests and Measurements*	3
(* Not required but strongly recommended for Secondary Education students.)		

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**Requirements: Elementary Level**

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**Second Year****Select One**

ED 201	Philosophy of Education	3
ED 210	History of Education	3
ED 409	Sociology of Education	3

**Select One**

ED 205	Human Development and Learning	3
ED 310	Understanding the School Child	3
PY 201	Child Psychology	3

**Third Year**

ED 303	Elementary Curriculum Methods I	3
ED 304	Elementary Curriculum Methods II	6
ED 420	Teaching Reading in the Elementary School (To be taken prior to the internship.)	3

**Fourth Year**

ED 414	Teaching Internship Elementary	12
ED 416	Education Workshop in Elementary Teaching (Concurrent with ED 414.)	3

In their senior year, students should plan on taking a fifteen-week supervised internship. Concurrently, they will be required to attend a workshop which will meet bi-weekly for two hours.

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**Education Courses**

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**ED 100 • 3 credits****Early Field Experience**

The Early Field Experience Program will offer underclassmen an overview of the teaching aspect of education through actual experience. In addition, this program will provide an opportunity for a career exploration and will aid the trainee in choosing his intended major in education. It is hoped that through this program, the trainee will confirm his reasons for embarking upon a career as an educator. Moreover, it is intended that the student become better acquainted with the current issues and problems confronting educators. This course should be taken during the second semester of the freshman year.

**ED 130 • 3 credits****Developmental Reading**

The developmental reading course offers training in fundamental skills in reading: work attack skills, structural analysis, vocabulary, comprehension improvement in reading rate. As this is an individualized course, each student works at his own rate on his own needs, and is expected to apply the skills studied by reading one book a week on his own.

**ED 132 • 3 credits****Organization of Library Material**

This course provides a comprehensive treatment of books and libraries to emphasize the variety of library materials, their organization for retrieval of information, and their potential for effective use.

**ED 201 • 3 credits****Philosophy of Education**

This course presents an introduction to major issues and problems in philosophy of education. Examination of some of the traditional areas of philosophical concern, and their relevance to the teacher-learning process is undertaken.

**ED 202 • 3 credits****Introduction to Early Childhood Education**

The primary purpose of this course is to introduce students to varied education programs in existence for young children. Students are expected to become familiar with current theories in child development and the relationship of these theories of education programs.



**ED 203 • 3 credits****Career-Life Planning Seminar**

This course involves learning and implementation of the Career-Life Planning Process to improve an individual's understanding of himself and of available career opportunities. Emphasis is placed upon assisting the individual to clarify and to formulate realistic goals and to devise an appropriate career plan to achieve these goals.

**ED 205 • 3 credits****Human Development and Learning**

A study of central developmental tendencies and stages as these underlie the unfolding of human potentialities. Consideration will be given to those conditions and factors which influence learning and forgetting. The nature of intelligence, the nature of learning, and the meaning of personality will be examined in the context of the teacher-learning process.

**ED 210 • 3 credits****History of Education**

This course analyzes the history of education in American culture in the context of social and intellectual developments. Emphasis will be given to the development of higher education, especially to the emergence of the university in America.

**ED 230 • 3 credits****Consumer Education**

An introduction to current issues and problems in consumer education. Among the areas to be covered are: "truth-in-lending laws"; deceptive pricing; door-to-door sales; repairs and services; automobile transactions; insurance; over-the-counter and prescription medicines; home-improvement transactions; business opportunities; buying a house; savings and investments.

**ED 303 • 3 credits****Elementary Curriculum Methods I**

This course is designed to present the organization of the curriculum in the elementary school. It includes, as part of the course, the opportunity for observation, basic methods and techniques of teaching and the uses of curriculum materials.

**ED 304 • 6 credits****Elementary Curriculum Methods II**

This course is designed to extend the study of basic methods and techniques of teaching into the specific areas of Reading, Language Arts, Mathematics, Social Studies, Sciences, Art and Music. It is planned for those who will be teaching in the elementary school. ED 303 is a prerequisite for ED 304.

**ED 306 • 3 credits****Curriculum Development in the Secondary School**

This course will introduce students to concepts, trends and terminology associated with curriculum development and implementation in secondary education. Emphasis will be in the latest in all subject areas of the secondary school. Students will be required to research a controversial issue in secondary education and present this research in an oral and written form.

**ED 307 • 3 credits****Teaching Methodology in the Secondary School**

This course encourages an understanding of the traditional and innovative strategies utilized in the teaching of secondary school subjects. Students are required to prepare a unit and

lesson plans in their subject areas. They are also responsible for the reading of texts that afford them some insight into the effective teaching of secondary school students. ED 306 is prerequisite for ED 307.

**ED 308 • 3 credits****Creative Writing and Teaching**

Creative and functional writing are two of the most important tools in elementary education. Skills and techniques in motivation will be the main theses in this course.

**ED 309 • 3 credits****New Curricula in the Secondary School**

An in-depth study of the new curricula in the disciplines of the secondary school forms the core of this course. A knowledge and understanding of the current curriculum development projects and research in the respective disciplines of students enrolled along with the development and implementation of innovative materials are the major goals. This course can be utilized in completing teacher certification requirements.

**ED 310 • 3 credits****Understanding the School Child**

This course is designed to study intensively the dynamics of working with children from pre-school through secondary school age. It includes the psychology of the patterns of behavior and growth and development, and their application in the classroom situation.

**ED 312 • 3 credits****Teaching the Disadvantaged**

Characteristics and problems of the disadvantaged student in both the elementary and secondary grades and ways of meeting his educational needs and interests will be the concern of this



course. Emphasis will be placed on innovations and appropriate materials and activities.

**ED 313 • 3 credits**  
**Activities workshop in Elementary School I**

Workshop is designed to develop creative teaching and learning. Various techniques, uses of materials and creative approaches for instruction, along with activities for the children, will be included. All areas of the curriculum will be covered.

**ED 315 • 3 credits**  
**Reading Improvement in the Secondary School**

A knowledge and an understanding of corrective and developmental reading forms the core of this course. Causes of reading difficulties among secondary school students is discussed along with effective means of remedying these difficulties. A knowledge of the

study skills needed by secondary school students and strategies for teaching these skills is also stressed.

**ED 316 • 3 credits**  
**Diagnostic and Remedial Reading Techniques in Reading**

This is a basic course for the classroom teacher. It will investigate factors contributing to reading disabilities, methods of diagnosis and treatment of reading problems.

**ED 318 • 3 credits**  
**Analysis of Reading Difficulties**

This is an advanced course for experienced teachers. It is designed to give the classroom teacher special skill in analyzing and removing reading deficiencies.

**ED 320 • 3 credits**  
**Language Arts in the Elementary School**

This course is designed for those preparing to teach the language arts as well as those interested in promoting more effective communication.

**ED 325 • 3 credits**  
**Industrial Arts in Special Education**

Methods and materials for teachers of special needs children involving making of useful classroom projects and developing skills in use of tools and materials. This course is applicable for special education certification.

**ED 331 • 3 credits**  
**Methods of Teaching a Foreign Language**

This course presents an introduction to the objectives, principles and methods of teaching a second language, and a con-

sideration of classroom procedures at different levels. The construction, utilization and evaluation of instructional materials are included.

**ED 333 • 3 credits**  
**Exceptional Child I**

This course is devoted to the problems of communications and understanding in children as exemplified by the labels "deaf", "hard of hearing", "aphasic", "physically handicapped", and "speech and hearing handicapped".

**ED 334 • 3 credits**  
**Exceptional Child II**

This course considers problems in children and adults as represented by the labels "blind", "emotionally disturbed", "mentally disturbed", "visually handicapped", and "learning disabled".



**ED 335 • 3 credits**  
**Speech and Language Disabilities**

This course includes a consideration of the development of speech and language in the child; discussion of the various types of speech handicaps encountered across the human age range; and presentation of therapeutic philosophies and practices.

**ED 338 • 3 credits**  
**Recent Trends in Elementary Education**

The main focus of this course will be on educational options. Current research will be studied as will its application to the contemporary classroom.

**ED 339 • 3 credits**  
**Psychological Testing**

This course is an introduction to elementary principles of statistical analysis as well as to those educational and psychological instruments and methods used in the measurement and evaluation of the psychological characteristics of people.

Teacher Certification  
Individuals choosing to meet state teacher certification requirements may register for courses offered by the Education Department in Continuing Studies (Evening Session or Summer Session).

**ED 346 • 3 credits**  
**Special Needs Child in the Regular Classroom I**

This course considers special child needs; means of assessing and understanding handicapped children; and methods, materials, and techniques for teaching such children in regular classrooms.

**ED 347 • 3 credits**  
**Affective Education in the Classroom**

This course involves experiential and didactic learning of how to teach values clarification, self-awareness, and problem solving

**ED 350 • 3 credits**  
**Reading: Evaluation and Measurement**

The primary purpose of this course is to assist students to evaluate research conducted in the area of reading. Studies include true experiments, quasi experiments, descriptive studies, sampling methods, along with other areas pertinent to educational research.

**ED 353 • 3 credits**  
**Education: Administration and Supervision**

This course will serve as a general introduction to contemporary practices and policies in educational administration and supervision. Instruction will be by lecture, case studies, and student reports. Among the topics to be covered are curriculum planning and design, staff organization and relationships, and student and community relationships.

**ED 354 • 3 credits**  
**Arts, Crafts and Motor Skills for the Special Needs Child**

This course is designed for persons who wish to broaden their knowledge of methods, techniques and practices utilized in the classroom to encompass the range of individual differences. Drawing, painting, paper sculpture, clay modeling, papier mache, macrame weaving, stitchery structured for the child needing special education techniques will be included.

**ED 356 • 3 credits**  
**Education Workshop: Community Resources for Solving Problems in Education**

This course is designed for both parents and teachers to increase awareness and use of community resources. Both existing and new resources will be applied practically by parents and teach-

ers to the education of children.

**ED 360 • 3 credits**  
**Activities Workshop in the Elementary School II**

This course is designed to develop creative teaching and learning. Included will be various techniques, uses of materials and creative approaches for instruction, along with activities for children. All areas of the curriculum will be covered.

**ED 366 • 3 credits**  
**Principles and Practices of Guidance**

This course examines and analyzes the development of significant trends and directions of guidance services. Issues and challenges confronting the practitioner of guidance in the seventies will be examined and discussed.

**ED 367 • 3 credits**  
**Principles of Counseling: Theory and Practice**

This course is an intensive study of counseling techniques and processes through the use of interviews, case studies, tapes and films.

**ED 370 • 3 credits**  
**Urban Education**

This course will explore educational problems which have been encountered by the urban child. There will be special emphasis on institutional racism, on teachers' attitudes and on studies that have been utilized by the academic community to reinforce the concept that some children are cognitively inferior to other children.

**ED 386 • 6 credits**  
**Introduction to Learning Disabilities: Beginning Students**

This course is for educators, lay persons, psychological and medical personnel. The primary emphasis of this course is upon the modalities of learning in children and the myriad factors which can interfere with the acquisition of skills and content material.

**ED 387 • 6 credits**  
**Learning Disabilities Workshop: Advanced Students**

This course is for persons who have attended institutes, seminars, public or private school training sessions or college-university special education programs in the training of perceptually handicapped children. Demonstrations and discussions of techniques and practices will be employed to maximize in children with perceptual handicaps.

**ED 388 • 3 credits**  
**Evaluation of Learning Disabilities**

This course concerns the varied learning functions required of the developing young child, some methodologies employed in evaluating the levels and strengths of such functions, the practices and procedures utilized to maximize such functions.

**ED 391 • 3 credits**  
**Reading Workshop**

The purpose of this workshop is to consider the various means of individualizing reading instruction. The skills involved in the reading process will be discussed. Teachers will be encouraged to develop a resource file of materials and activities for reinforcing the basic reading skills.



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**ED 396 • 3 credits**  
**Instructional Media**

Knowledge and application of diversified audio-visual equipment and techniques for classroom teachers will form a core of this course. A workshop approach utilizing the Audio-Visual Center at SMU will lead to more effective use in the classroom.

**ED 403 • 3 credits**  
**Applied Aesthetics for the Classroom**

This course will act as a guide for elementary teachers in becoming comfortable with the visual arts, film, and theatre/television media. It will meet the needs of the classroom teachers in the most pressing challenge confronting educators today - learning how to become effective communicators.

**ED 404 • 3 credits**  
**Introduction to Applied Linguistics for Teacher Preparation**

This course will provide an intensive yet informal introduction to the world of language. Films, lectures, and discussions will lead the participants to a better understanding of the English language and of recent discoveries in the field of linguistics.

**ED 406 • 3 credits**  
**Seminar in Guidance and Counseling I**

The work of this seminar consists of an analysis and discussion of contemporary counseling procedures in relation to personality and behavior. The theoretical principles and practical applications of various modalities will be examined in association with sound/film demonstrations of the related practices.

**ED 407 • 3 credits**  
**Seminar in Guidance and Counseling II**

This seminar entails advanced work and research in matters that relate to Guidance and Counseling. The Seminar will be organized into topics clustering around the interests of students. Each will undertake a research project followed by a presentation to the group for examination and criticism.

**ED 409 • 3 credits**  
**Sociology of Education**

The effects on the school program of social class, family and community pressures, and changing patterns and standards of life in American society are studied. Basic understanding of these pressures and patterns are developed to enable the teacher to become aware of and sensitive to the impact of social forces upon children.

**ED 410 • 3 credits**  
**Tests and Measurements**

This course is concerned with development and use of tests; application of measurement devices in teaching, evaluation and research; assumptions of testing and observation; development and utilization of objectives; and basic statistics of measurements. This course is required by most graduate schools of education.

**ED 411 • 3 credits**  
**Children's Literature in the Elementary School**

Since the "Right to Read" is all inclusive, participants will survey literature available for children. Part of the time will be devoted to writing children's stories (includes critical criteria, approaches, etc.). This course is acceptable for reading certification.

**ED 413 • 3 credits**  
**Teacher Self-Evaluation and Supervision**

In this course participants will clarify their teaching goals and set criteria for measuring the extent to which their goals are being met. Teams of participants will develop their skills in systematically observing and analyzing the process and product of teaching-learning situations. There will be audio and/or video taping, as well as peer interaction and coding systems.

**ED 414 • 12 credits**  
**Internship in Teaching (Elementary)**

This internship is a fifteen-week, full-time classroom experience under the direction of university faculty and cooperating classroom teachers.

**ED 415 • 12 credits**  
**Internship in Teaching (Secondary)**

This internship is a fifteen-week, full-time classroom experience under the direction of university faculty and cooperating classroom teachers.

**ED 416 • 3 credits**  
**Workshop in Elementary Teaching**

This workshop includes small group meetings, workshops and discussions, with university faculty and other key school personnel, of critical incidents and issues arising from and related to the interns' actual teaching experiences. It is a required part of the Teaching Internship.

**ED 417 • 3 credits**  
**Workshop in Secondary Teaching**

This workshop includes small group meetings, workshops and discussions, with university faculty and other key school personnel, of critical incidents

and issues arising from and related to the interns' actual teaching experiences. It is a required part of the Teaching Internship.

**ED 418 • 3 credits**  
**Teaching Internship in the Ungraded School**

The internship is a teaching practicum for the non-graded school on an intermediate and high school level. It involves both academic and community involvement in the school activities and provides teaching experiences in individual, small-group, and large-group programs.

**ED 422 • 3 credits**  
**Sensitivity Training for Teachers**

This course presents a practical laboratory experience in the study of the behavior of groups and the behavior of individuals within a group.

**ED 426 • 3 credits**  
**Workshop in Early Childhood Education**

In this course students will be expected to create and use learning experiences in art, music, language, literature, drama, nature study and human inter-relationships.

Prerequisite: Any course in Early Childhood Education, current work with young children, or permission of instructor.

**ED 428 • 3 credits**  
**Chapter 766: Purpose, Procedures, Price**

This course presents an exposition of General Laws, Chapter 766 and its regulations with specific reference to privileges and constraints, and roles of administrators, diagnosticians, teachers and support personnel. It relates local fiscal responsibilities to the mandated State reimbursement process.

**ED 431 • 3 credits**  
**A Method of Teaching Grammar by Creative Integration**

This course encourages the development of a method of aiding students to gain an appreciation and knowledge of the various forms and structures of the English language and the use of this knowledge in improving communication. Students and the instructor are expected to write their own texts. This is a course for English teachers, language teachers and media people.

**ED 432 • 3 credits**  
**Testing for Teachers**

This course prepares teachers to make informal tests for students at the elementary and secondary level.

**ED 446 • 3 credits**  
**Special Needs Child II**

This course concerns the needs of handicapped children with specific reference to problems in reading; providing individualized techniques, practices and methodologies to fit the assessed needs.

**ED 451 • 3 credits**  
**Contemporary Issues and Challenges**

This course is designed to help students understand contemporary problems such as drugs, venereal disease, sexism, racism, along with other related areas.

**ED 455 • 3 credits**  
**Behavior and Learning**

This course examines various learning variables conceptualized by psychoanalytic and operant learning theory.

**ED 457 • 3 credits**  
**Education and Mental Health**

This course will examine the issues and techniques involved in the early detection, diagnosis, and evaluation of mental, moral, social and educational problems, including learning disabilities.

**ED 460 • 3 credits**  
**Arts for the Elementary Class**

A number of fundamental techniques will be presented experientially to students preparing to teach grades K-6 that will help a classroom teacher who is not a specialist in art. Various principles of design and kinds of materials available inexpensively are introduced. The range of complexity in performance is based upon the developmental levels of children. The course stresses the integration of art activities with other elementary curriculum disciplines.

**ED 485 • 3 credits**  
**Career Information and Placement**

This course will include theory and research in career development, functions of occupational information in guidance, role of the counselor in placement, and models for an effective placement office.

**ED 495 • 3 credits**  
**Independent Study**

Terms and hours will be arranged. Confer with appropriate members of the Education Department.

**ED 496**  
**Directed Study**  
Confer with Associate Dean of Students.

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## Faculty and Fields of Interest

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**Marie Ahearn** • American literature

**Nathaniel Atwater** • Chaucer, Anglo-Saxon and medieval literature

**Americus Cleffi** • world literature, advanced composition

**Genevieve Darden** • journalism, world literature

**Earl Dias (chairperson)** • Shakespeare, comparative drama, modern drama

**Louise Habicht** • American literature, Southern renaissance

**Margaret Hall** • 19th century novel, women's literature

**Everett Hoagland** • Black literature, creative writing

**Vernon L. Ingraham** • modern British literature, poetry, Irish literature

**Barbara Jacobskind** • American literature, women in literature

**Martha Laferriere** • linguistics, English as a second language

**Richard Larschan** • 18th century English literature

**James E. Marlow** • Victorian novel, 19th century British literature

**Mary Mattfield** • creative writing, American poetry

**James Nee** • comparative literature, film

**William Nicolet** • 16th century British literature, literary criticism

**Margaret Panos** • American literature, freshman English

**Norman Rehg** • world literature, biography, classicism and romanticism

**Richard Reis** • romanticism, Old English, experimental novel

**Alan Rosen** • Victorian literature, bibliography

**Yvonne Sandstroem** • 17th century British literature

**Roger Sorkin** • Shakespeare, comparative drama

**Edwin J. Thompson** • The modern novel

**Robert Waxler** • romanticism

**Charles White** • American literature, film

In scheduling its courses the Department recognizes its obligations to its English majors — a group that includes those who intend to go on to graduate study, those who intend to enter the professions of teaching, and those who plan on careers in such areas as public relations, editorial work, creative writing, journalism, personnel work, and the like. The Department also recognizes its obligations to non-English majors — those students who elect English courses in order to gain some acquaintance with the rich cultural heritage that English, American, and Comparative Literature provide



## English Major

To receive a degree with a major in English, the student must have demonstrated his ability to read intelligently and perceptively in such genres as imaginative literature in fiction, poetry, and

drama, in works of literary criticism and literary history, and in works dealing with the nature of language itself. A candidate must also demonstrate the ability to write effectively, to use a library

efficiently and honestly, to deal critically with generalizations about historical periods and genres, and to handle a variety of critical questions with some maturity.

## Requirements

		Semester Credits
EN 213, EN 214, EN 215	A three-semester sequence devoted to a survey of English Literature from Beowulf to Hardy	9
EN 300	Survey of American Literature	3
EN 360	Shakespeare	3
	A senior Seminar from the EN 400 offerings	3
	Additional English Courses*	12
		<b>30</b>

\*These should be selected judiciously from period courses, genre courses, and courses in individual authors.

## Language Requirements

In regard to the language requirement, the English major may select either of two options:

1. He may fulfill the language requirement by completion of course 202 in a modern language at SMU.

2. Or he may elect, in place of the language requirement, to take 9 additional credits in English, thus bringing his required minimum total of credits

in English to 39. The English major must also fulfill the distribution of course requirements set by the College of Arts and Sciences.



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## English Courses

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### **E 101 • 3 credits**

#### **Freshman English I**

The aim of the course is to develop the student's ability to write clear, correct, effective English that reflects logical thinking and mature judgment.

### **E 102 • 3 credits**

#### **Freshman English II**

The primary purpose of E 102 is to introduce the students, through a series of readings in fiction, drama, and poetry, to the basic principles of literary analysis.

E 101 and E 102 are prerequisites for all upper-class English courses unless otherwise noted.

### **E 203 • 3 credits**

#### **Survey of World Literature I**

The course may be, at the discretion of the instructor, a study of selected masterpieces from the Golden Age of Greece to the Renaissance, or selected readings built around a special topic.

### **E 204 • 3 credits**

#### **Survey of World Literature II**

The course may be, at the discretion of the instructor, a study of selected masterpieces from the Renaissance to the present, or selected readings built around a special topic.

### **E 207 • 3 credits**

#### **Major American Writers**

The course offers a study of selected American writers, with emphasis on major figures of the 19th and 20th centuries. Not open to English majors except as a free elective.

### **E 208 • 3 credits**

#### **Major British Writers**

The course is a study of selected English writers from early English literature to the present. Not open to English majors except as a free elective.

### **E 209 • 3 credits**

#### **The Bible as Literature**

Offered only in Division of Continuing Education.

### **E 210 • 3 credits**

#### **Literature of the American West**

The course explores the myths and realities of the American West (west of the Mississippi) as they are reflected in literature, e.g. the cowboy, westward expansion, the Spanish conquistadors, etc.)

Prerequisite: E 102

### **E 211 • 3 credits**

#### **The Structure of Language**

Provides students with a basic working knowledge of phonology (systems of sounds), morphology (word structure) and syntax (sentence structure). Includes also an examination of various social and regional dialect patterns and requires of students the completion of a field project on some aspect of the speech of their town or home.

### **E 213 • 3 credits**

#### **Survey of English Literature I**

A careful study of English writers from *Beowulf* to Shakespeare. Required of English majors.

### **E 214 • 3 credits**

#### **Survey of English Literature II**

A careful study of English writers from Donne to Samuel Johnson. Required of English majors. Prerequisite: E 213

### **E 215 • 3 credits**

#### **Survey of English Literature III**

A careful study of English writers from Blake to Hardy. Required of English majors. Prerequisite: E 214

### **E 216 • 3 credits**

#### **Survey of 20th Century English Literature**

The course concentrates on English writers of the 20th century. Optional for English majors and open as an upper-class elective.

### **E 223 • 3 credits**

#### **Survey of American Literature I**

A survey of American writing from the Colonial Period to the Civil War. Emphasis is placed on the historical, cultural, and philosophical developments which created a native American literature. Required of English majors.

### **E 224 • 3 credits**

#### **Survey of American Literature II**

Consideration of American writing from the Civil War to the present. Prerequisite: E 223

### **E 225 • 3 credits**

#### **Introduction to Poetry**

Examination of a poem's meaning and the devices used to develop that meaning, such as symbolism, connotation, and figures of speech. Also consideration of metre, rhyme, and of such distinctive forms as the sonnet, elegy, ode, and ballad.

### **E 226 • 3 credits**

#### **Introduction to the Novel**

Using selected novels, the course aims to teach the student how to read a work of fiction, to become acquainted with the various types of novels, and to learn something about the history of the novel as a genre.

### **E 231 • 3 credits**

#### **Advanced Composition**

Primarily for students who wish to gain more proficiency in the art of communication. Emphasis is placed on the development of skill in organization of mate-

rials; the forming of a lively and concrete style, and the growth of useful techniques in the arts of exposition, persuasion, and argumentation.  
Prerequisite: Permission of instructor

**E 233 • 3 credits**  
**Creative Writing (Poetry)**

The study of contemporary techniques in the writing of poetry. Manuscripts will be read and discussed in class, and individual conferences will be arranged. Enrollment is limited to 20 students.  
Prerequisite: Permission of instructor.

**E 234 • 3 credits**  
**Creative Writing (Fiction)**

The course concentrates on the techniques of writing fiction. Manuscripts are read and discussed in class; individual conferences are arranged. Limited to 20 students.  
Prerequisite: Permission of instructor

**E 235 • 3 credits**  
**Creative Writing (Playwriting)**

A study of the fundamental principles of dramaturgy. Manuscripts are read and discussed in class; individual conferences are arranged. Limited to 20 students.  
Prerequisite: Permission of instructor

**E 236 • 3 credits**  
**Introduction to Journalism**

The course deals with the techniques of news and feature writing in conjunction with lectures on libel and slander, today's "interpretive" reporting, international news services and syndicates, the importance of the columnist, the physical setup of

a newspaper plant, the functions of the copy desk, and other subject pertinent to journalism as a profession.  
Prerequisite: Permission of instructor.

**E 240 • 3 credits**  
**Speech**

An introduction to the art of public speaking through the study of effective principles combined with adequate practice in speaking before a group. Limited to 20 students.

**E 270 • 3 credits**  
**The Bible in Modern Literature**  
Offered only in Division of Continuing Education.

**E 302 • 3 credits**  
**Feature Story and Article Writing**

A workshop in writing of "human interest" articles for newspapers and magazines, and in improving essay-writing skills. Guest lecturers from the professional field will be included.

**E 312 • 3 credits**  
**Socio-Linguistics**

Requirements: previous linguistics training is helpful, but not necessary. Course Description: "Sociolinguistics" offers an introduction to the study of language in its social context; readings and discussion of the ethnography of communication, speech and cultural values, speech and social institutions, bilingualism, code-switching,

standard/non-standard language varieties and socio-cultural values, and phonological variation in its social context. All students participate in an ongoing research project — "Phonological variation in the Fall River/New Bedford Area and its Social Significance." Students will conduct interviews, formulate research topics, and par-

ticipate in the analysis of data.

**E 318 • 3 credits**  
**The Decadence**

A study of the historical conditions and the literary and artistic theories of the late nineteenth century which culminated in the movement called The Decadence. Novels, plays, poems, and essays by such writers as Wilde, Morris, Swinburne, and Pater will be included.

**E 319 • 3 credits**  
**The Victorian Novel**

A study of the Victorian novel both historically and generically, from Jane Austen to Thomas Hardy. Works by Austen, the Brontës, Dickens, Thackeray, Trollope, Meredith, George Eliot, and Hardy will be considered.

**E 320 • 3 credits**  
**Old English Language and Literature**

Essentials of Old English grammar along with minor poetry and prose selections constitute a basis for the study of the Old English folk epic, *Beowulf*.  
Prerequisite: E 213 or permission of instructor

**E 321 • 3 credits**  
**16th Century English Literature — The Tudor Age**

A study of the development of non-dramatic literature of the Tudor Period stressing both the literary and historical value of the great works of the Elizabethans and the shaping of the English language as a tool which made those works possible.  
Prerequisite: E 213 or permission of instructor.

**E 322 • 3 credits**  
**17th Century English Literature**  
A survey of 17th-century non-dramatic literature from Donne to Dryden which will focus on three major themes: the evolu-

tion of modern English prose, the culmination of Elizabethan poetry in the metaphysicals, and the evolution of neo-classical poetic modes.  
Prerequisite: E 214 or permission of instructor.

**E 323 • 3 credits**  
**18th Century English Literature**

A study of English Literature of the 18th century, with special emphasis on Dryden, Swift, Pope, Johnson, and his circle.  
Prerequisite: E 214 or permission of instructor.

**E 324 • 3 credits**  
**The English Romantic Age**

A survey of English literature from 1798-1832, stressing the major poets — Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, with some study of novels and personal essays.  
Prerequisite: E 215 or permission of instructor

**E 325 • 3 credits**  
**The Victorian Age**

A study of the major English writers of non-fiction between 1832 and 1900. Some prose non-fiction will be covered (Carlyle, Ruskin, Mill, etc.) but major emphasis is on such poets as Tennyson, Browning, Arnold, Rossetti, Swinburne, Meredith, Hopkins, and Housman.  
Prerequisite: E 215 or permission of instructor.

**E 326 • 3 credits**  
**The Irish Literary Revival**

The course deals with the development of Irish literature from the end of the 19th century through the first decades of the 20th century. Writers studied include Yeats, Joyce, Synge, and O'Casey. The cultural, historical, and political background of Anglo-Irish relations also will be examined.



**E 327 • 3 credits****The Southern Renaissance**

A study of such Southern writers as Faulkner, Wolfe, Warren, McCullers, Ellison, Ransom, Tate, and Tennessee Williams with the following questions in mind: what was the mood of the South which produced this renaissance? In what manner are the works related to or dependent on the writers' Southern background? What is the relationship of Southern to American literature?

**E 328 • 3 credits****The American Renaissance**

A study of the five major figures of mid-19th century American literature — Hawthorne, Melville, Emerson, Thoreau, and Whitman. Readings also in the intellectual and social movements of the period.  
Prerequisite: E 224 or permission of instructor.

**E 329 • 3 credits****The American Dream**

The course acquaints the student with concepts of the American Dream from its emergence to contemporary interpretation as viewed by American authors of fiction, drama, and poetry. The concepts of freedom, business success, the power of land, and the promise of education are studied in such works as Franklin's **The Way to Wealth**, Horatio Alger's **Ragged Dick**, Arthur Miller's plays, Whitman's poetry, Doctorov's **Ragtime**.

**E 330 • 3 credits****History of the English Language**

A study of the development of English pronunciation, grammar, syntax, and vocabulary in the Old English, Middle English, and Modern English Periods.

**E 336 • 3 credits****British Drama to 1642**

A study of British drama from its beginnings in the Middle Ages through the closing of the theaters by the Puritans in 1642. Chief emphasis is on the drama of the Elizabethan and Jacobean Periods.

**E 338 • 3 credits****Advanced Journalism**

Offered only in Division of Continuing Education.

**E 339 • 3 credits****19th Century American Poetry — from the Puritans to 1900**

A study of representative American poets from Anne Bradstreet and Edward Taylor to Emily Dickinson and Stephen Crane. Concentration will be on the development of the American poetic tradition in the 19th century. Designed for English majors.  
Prerequisite: E 102

**E 340 • 3 credits****20th Century American Poetry**

A consideration of significant trends in American poetry from the Modernist revolution to the present day. Although emphasis will be on such major figures as Frost, Eliot, Pound, Stevens, and Williams, critical attention will be given to the work of younger contemporaries. Designed for English majors.  
Prerequisite: E 102

**E 343 • 3 credits****The Art of Biography**

A study of the most significant biographical writing from antiquity to the present time. The student will be expected to learn discrimination among various methods by which a biographer recreates human life and character.

**E 344 • 3 credits****The Golden Ages of Drama**

The course deals with representative plays from the most famous and most productive eras in the history of world drama — Fifth Century B. C. Greece, the drama of the Middle Ages, the Renaissance, the age of Moliere, and the realistic and romantic drama of the 19th century Germany and France.

**E 345 • 3 credits****Studies in Classicism and Romanticism**

The course places in contrast the two major modes of thought and expression in Western Civilization and attempts to show what part each has played in the development of Western man, in the creation of major works of literature and in the formation of individual personality. Analogous examples from music, painting, sculpture, and architecture will be considered.

**E 346 • 3 credits****American Drama from 1767 to Present**

A study of the most important American dramatists, plays, and movements from shortly before the Revolution to the present. Although some attention is paid to the body of American drama from 1767-1865, the emphasis is on major American playwrights from World War I to the present. Some outside reading required in drama criticism and in historical background.

**E 347 • 3 credits****The English Novel to 1800**

A study of types of fiction popular in the 18th century and the reading of major works of the period. Some consideration of the novel as an art form and of its interaction with historical developments. Such writers are considered as DeFoe, Bunyan,

Smollett, Sterne, Richardson, Fielding.

**E 348 • 3 credits**  
**The 19th Century American Novel**

A study of American novelists from Cooper to Crane. Attention will focus on individual works as art and as examples of the development of the novel form in America during the 19th century.

**E 349 • 3 credits**  
**The 20th Century British Novel**  
A study of the 20th century British novel, including such authors as Conrad, Woolf, Joyce, Lawrence, Forster, Huxley, Waugh, Caryl, and Greene.

**E 350 • 3 credits**  
**The 20th Century American Novel**

A study of the 20th Century American novel from the naturalists to the present. Some of the authors considered are Dreiser, Norris, Anderson, Wolfe, Hemingway, Faulkner.

**E 351 • 3 credits**  
**Modern Drama**

A study of modern dramatists from Ibsen, Chekhov, and Strindberg through such playwrights as Brecht, Shaw, O'Neill, Galsworthy, Eliot, Williams, Miller, Giraudoux, Ionesco, Albee, Pinter, and others. Emphasis is placed on the changes and developments in dramatic techniques that have occurred in recent years.

**E 352 • 3 credits**  
**Modern Poetry**

A study of the chief trends and of the major poets and poetic movements in modern British and Continental poetry.

**E 353 • 3 credits**  
**The 19th Century Continental Novel**

A study of major French, German, and Russian novelists of the 19th century, including such major figures as Flaubert, Balzac, Zola, Tolstoy, Dostoevsky, and others.

**E 354 • 3 credits**  
**The 20th Century Continental Novel**

A study of major French, Russian, German novelists of the 20th century, including Mann, Gide, Camus, and others.

**E 355 • 3 credits**  
**American Literature and the Arts**

The course relates the literary and artistic expressions of American culture so that the literature is enhanced by an examination of the art and architecture. The course investigates, through literary works and discussions of representative artists and architects, the role of the arts and of the artist as creator, carrier, and critic of the American culture.

**E 356 • 3 credits**  
**The Influence of Economics on American Literature**

The course deals with those writers whose literature is a reaction to the increased economic and technological changes in American society. Emphasis is on the writings of Franklin, Thoreau, Twain, James, Frost, and Steinbeck.

**E 357 • 3 credits**  
**Myth and Literature**

An exploration of the relationship between myth and literature. The anthropology and psychology of archetypal narratives, rituals, and figures will be examined for their import to the study of literature. Among theorists of myth studies: Freud, Eliade, Jung

Among literary figures: Homer, Joyce, Shakespeare.

**E 358 • 3 credits**  
**Literature of Black People in America**

The course explores the variety and range of black writing in 20th century America. Emphasis is placed on the works of W. E. B. Dubois, Langston Hughes, Richard Wright, Ralph Ellison, James Baldwin, and LeRoi Jones.

**E 359 • 3 credits**  
**Images of Women in Literature**  
A study of archetypes and stereotypes of women in literature from the ancient world to the present, in an attempt to re-evaluate traditional literary criticism and the way authors have used images of women to create character, plot, etc.

**E 360 • 3 credits**  
**Women Writers**

The study of literature by and about women, this course examines the relationship between the woman writer and her work, including such questions as "is there a feminine style?" "Are there certain themes which women writers are drawn to?" "What has been the role of women writers in the development of various genres?"

**E 361 • 3 credits**  
**Chaucer**

Intensive reading and critical analysis of **The Canterbury Tales** with due attention to Chaucer's language and ethos. Further emphasis is on Chaucer's humanity and the freshness of his thought for the reader of the 20th century.

**E 362 • 3 credits**  
**Shakespeare**  
A careful reading of 10-12 of Shakespeare's plays selected from the comedies, tragedies,

and histories. Emphasis is on Shakespeare's development as a dramatist, the reasons for his reputation as the greatest poet in the language, and the manner in which his plays reflect Elizabethan attitudes, customs, and beliefs. Some outside reading is required in Shakespearean criticism and in the background of the period. Required of English majors and also open as upper-class elective.

**E 363 • 3 credits**  
**Milton: Selected Poetry and Prose**

A study of Milton's poetic achievement based on the reading of selected minor poems and their developmental relationship to *Paradise Lost*, *Paradise Regained*, and *Samson Sargon*. Prerequisite: E 214 or permission of instructor.

**E 364 • 3 credits**  
**20th Century Drama**  
A study of selected American, British, and Continental dramatists.

**E 365 • 3 credits**  
**Hawthorne and Melville**  
An examination of the works and relationship of the two writers, treating both short and long fiction by both. Readings will include each author's masterpiece: Hawthorne's **Scarlet Letter** and Melville's **Moby-Dick**.

**E 368 • 3 credits**  
**20th Century British Drama**  
A study of such dramatists as Stoppard, Osborne, Bond, and others.

**E 369 • 3 credits**  
**Contemporary American Fiction**  
A study of significant fiction produced in America since mid-

century. Writers represented include Mailer, Bellow, Ellison, Heller, Barth, Pynchon, Vonnegut, and others.

**E 370 • 3 credits**

**Contemporary British Fiction**

The course traces important trends in British fiction since World War II. Writers represented include Cary, Beckett, Golding, Orwell, Tolkien, Lessing, Fowles, and others.

**E 380 • 3 credits**

**Introduction to Research Methods and Bibliography**

Materials and techniques of research in British and American literature; bibliography, form, and content of papers and theses. Open only to Junior and Senior English majors. Maximum enrollment — 10 students.

Prerequisite: E 213, E 214

**E 400**

**Seminars**

Offerings: Seminar courses in the Department of English are required of and restricted to English majors. They are open only to Senior English majors and to Junior English majors if space is available. Their purpose is to afford an opportunity for intensive exploration and discussion of a particular area of literature or literary history. The Seminars are limited in class size to 15 students to achieve the above objectives. The following is a list of Seminars that have in recent years been available to English majors:

**E 401 • Shakespeare**

**E 402 • Spencer**

**E 403 • Aspects of the Renaissance**

**E 404 • Hawthorne**

**E 407 • Henry James**

**E 408 • Yeats and Eliot**

**E 409 • Donne, Jonson, Marvell**

**E 410 • The Modern Experimental Novel**

**E 411 • Dark Tradition in American Literature**

**E 412 • Satire**

**E 413 • Poetic Movements in 20th Century British Poetry**

**E 414 • Problems in Literary Art**

**E 415 • Comic Tradition in American Literature**

**E 416 • Melville**

**E 417 • Literary Controversies**

**E 419 • The Metaphysical Poets**

**E 421 • Coming of Age in the Novel**

**E 423 • Dickens**

**E 424 • Faulkner**

**E 425 • History of Literary Criticism**

**E 426 • Blake**

**E 427 • American Drama**

**E 429 • Naturalism in American Fiction**

**E 430 • Realism in American Fiction**

**E 431 • Joyce**

**E 432 • Contemporary American Poetry**

**E 433 • Thoreau**

**E 434 • Literature of the Absurd**

**E 437 • Bronte and Eliot**

**E 438 • Dickinson, Cather, Fuller**

**E 439 • Creative Writing (Advanced) — Poetry**

**E 440 • Swift**

**E 450 • Independent Study**

**E 490 • Contract Learning**





# Foreign Literature and Languages

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## Faculty and Fields of Interest

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**Joseph Bronstad** • 20th century German literature and culture

**Antone Felix** • Portuguese culture and civilization

**Lewis Kamm** • 19th and 20th centuries French literature

**Giulio Massano** • Spanish and Italian literature of the Middle Ages, Renaissance and Baroque

**Maria Moreira** • 20th century Brazilian literature; Latin American culture

**Wesley Panunzio** • French linguistics; Latin; Cognitive theory

**Gregory Rocha (chairperson)** • 19th and 20th centuries Portuguese literature

**Maria Rocha** • 19th and 20th centuries Spanish and Latin American literature

**John H. Twomey** • 20th century Spanish and Latin American literature

**Joseph Vinci** • Spanish literature of the Middle Ages and Golden Age

ture of the Middle Ages and Golden Age

**Ida H. Washington** • 19th century German literature

**Lawrence Washington** • German literature since 1750; linguistics

**Walter J. Weeks** • 19th and 20th centuries Russian literature

**Melvin Yoken** • 19th and 20th centuries French literature

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## Language Major

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The Department offers basic courses in six languages: French, German, Italian, Portuguese, Russian and Spanish, in addition to courses in Latin, linguistics and language methodology. A student who has demonstrated his aptitude and performance in languages, may elect a major in French, German, Portuguese, and Spanish.

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## Requirements

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A student who wishes to specialize in a modern language — French, German, Portuguese or Spanish — must complete a minimum of 24 credits above 202 or its equivalent in the major field. Twenty one of these credits must be taken in courses taught in the language. In French, Portuguese and Spanish courses 301 and 302 are required. The remaining 18 hours will be chosen at the discretion of the student with the approval of the adviser. To qualify for any language course at the 300 level, a student must complete 202 or its equivalent. Students, wishing to take 400-level courses, must ordinarily fulfill the requirement for the 300-level courses, and obtain

the consent of the instructor teaching the 400-course and must have earned at least 12 credits in their major at SMU. A grade of 2.0 in the chosen language must be attained for graduation.

The Department recommends that all students specializing in modern languages, especially those planning to teach or pursue a higher degree, take at least 18 hours in a second foreign language.

### Practice Teaching

Effective September 1, 1977, the Department of Foreign Literature and Languages permits only those students with a

3.0 cum. in their major to engage in the University's Teaching Intern Program. Each semester, a list of qualified students will be submitted to the Department of Education.

### Honors

Senior majors in the Foreign Literature and Languages Department who have an overall cum. of 3.5 can choose to do honors work. The student must take a three (3) credit independent study on a specific topic. This course will have an extensive reading list and the student must present a long term paper which will be evaluated by a committee. The term paper must have at least a grade of A—.

## French Courses

### **FR 101 • 3 credits**

#### **Elementary French I**

Essentials of aural-oral, reading and writing usage of the target language, with intensive drilling on pronunciation, intonation and grammar. Three recitations and one hour of laboratory per week

### **FR 102 • 3 credits**

#### **Elementary French II**

Continuation of FR 101.

### **FR 201 • 3 credits**

#### **Intermediate French I**

Review of grammar with composition and aural-oral practice. Introduction to French culture and civilization through intensive and extensive reading. Three recitations and one hour of laboratory per week.  
Prerequisite: FR 102 or equivalent.

### **FR 202 • 3 credits**

#### **Intermediate French II**

Continuation of FR 201.

### **FR 203 • 3 credits**

#### **French Literature in Translation I**

Outstanding works of French literature through the eighteenth century. Readings, lectures, and discussions in English.  
Prerequisite: E 102

### **FR 204 • 3 credits**

#### **French Literature in Translation II**

Outstanding works of French literature of the nineteenth and twentieth centuries. Readings, lectures, and discussions in English.  
Prerequisite: E 102

### **FR 301 • 3 credits**

#### **French Composition and Conversation I**

Oral and written reports. Practical application of grammar vocabulary building and intro-

duction to style.

Prerequisite: FR 202 or equivalent.

### **FR 302 • 3 credits**

#### **French Composition and Stylistics**

Through the appreciation and analysis of literary models and their structure and by emulation and extensive writing, the student improves his ability in self-expression and his critical judgment of style.

Prerequisite: FR 202

### **FR 323 • 3 credits**

#### **French Phonetics**

Transcription of prose and poetry in terms of the International Phonetic Alphabet. Phonetic and phonemic change, regionalisms, intonation stress and articulation.  
Prerequisite: FR 202 or equivalent.

### **FR 331 • 3 credits**

#### **Masterpieces of French Literature I**

The representative authors, poets and dramatists of French literature from La Chanson de Roland through the age of Enlightenment will be read and discussed.  
Prerequisite: FR 202 or equivalent.

### **FR 332 • 3 credits**

#### **Masterpieces of French Literature II**

The main literary movements from the nineteenth century to the contemporary period will be analyzed. Discussion of literary genres and important aspects of French literary history.  
Prerequisite: FR 202 or equivalent.

### **FR 443 • 3 credits**

#### **French Literature of the Renaissance**

Critical readings of Villon and of major authors of the sixteenth century, chiefly Marot, Rabelais, Ronsard, DeBellay and Montaigne.

Prerequisite: FR 202 and consent of instructor.

### **FR 445 • 3 credits**

#### **French Literature of the Seventeenth Century**

Analysis and critical discussion of works from the French Classical period.

Prerequisite: FR 202 and consent of instructor.

### **FR 452 • 3 credits**

#### **The Age of Enlightenment**

Growth of the philosophical movement and formation of the revolutionary spirit. Development of the novel, theatre, etc., in the works of Le Sage, Montesquieu, Voltaire, Diderot, Rousseau, etc.

Prerequisite: FR 202 and consent of instructor.

### **FR 455 • 3 credits**

#### **French Literature of the Romantic Period**

Selected readings in Chateaubriand, Lamartine, Vigny, Musset and Hugo.

Prerequisite: FR 202 and consent of instructor.

### **FR 456 • 3 credits**

#### **French Literature of the Post-Romantic Period**

Study of the form and development of the novel, drama, theatre and poetry with readings in Stendhal, Balzac, Flaubert, Baudelaire, Rimbaud, Mallarmé, Verlaine and Zola.

Prerequisite: FR 202 and consent of instructor.

### **FR 461 • 3 credits**

#### **Contemporary French Literature**

Main currents of literary thought as reflected in the drama, novel, and poetry of today: Claudel, Proust, Gide, Sartre, Camus, Duhamel, Romain, etc.

Prerequisite: FR 202 and consent of instructor.

### **FR 481 • 3 credits**

#### **Seminar in French**

An intensive study of a specific topic, such as a particular author or literary movement. The topic will vary from year to year so that the course may be repeated for credit.

Prerequisite: FR 302 or consent of instructor.

### **FR 482 • 3 credits**

#### **Seminar in French**

Similar to FR 481 but with a different topic.

Prerequisite: FR 302 or consent of instructor.

### **FR 495**

#### **Directed Studies**

### **FR 496 • 2-4 credits**

#### **Independent Study**

Intensive study or research on a special topic under the direction of a staff member. Hours to be arranged.

Prerequisite: Senior standing.

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## German Courses

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**GE 101 • 3 credits****Elementary German**

Introductory study of the language and its grammatical structure. Development of the skills of understanding, speaking, reading and writing. Three hours of recitation and one hour of laboratory per week.

**GE 102 • 3 credits****Elementary German**

Continuation of GE 101.

**GE 103 • 3 credits****Conversational German I**

This course is parallel to GE 101; but the emphasis is on learning to understand and speak in everyday situations, particularly in connection with travel and life in Germany today. No previous knowledge of German required.

**GE 104 • 3 credits****Conversational German II**

Continuation of GE 103 (Parallel to GE 102).

**GE 201 • 3 credits****Intermediate German**

Review of grammar. Development of facility in composition and conversation. Intensive and extensive reading in texts of cultural and literary value. Three hours of recitation and one hour of laboratory per week. Prerequisite: GE 102 or equivalent.

**GE 202 • 3 credits****Intermediate German**

Continuation of GE 201.

**GE 203 • 3 credits****German Literature in Translation**

A survey of German literature from its beginnings through the works of Goethe and Schiller. Lectures, discussion, and reading in English. Prerequisite: E 102

**GE 204 • 3 credits****German Literature in Translation**

A survey of nineteenth and twentieth century German literature. Lectures, discussions, and reading in English.

Prerequisite: E 102

**GE 311 • 3 credits****German Culture and Customs**

Through reports, readings, and discussions in German, the student will learn about life in Germany, Austria, and Switzerland, both on the contemporary scene and from a historical perspective.

Prerequisite: GE 202 or equivalent.

**GE 326 • 3 credits****History of the German Language**

The historical development of German from its Indo-European origins to the present, its vocabulary, forms, and syntax particularly in their relationship to English. No previous knowledge of German required.

**GE 335 • 3 credits****German Poetry**

A survey of German poetry from the ninth to the twentieth century, with analysis of changing form and content.

Prerequisite: GE 202 or consent of instructor.

**GE 357 • 3 credits****German Novelle**

The short prose form in its development during the nineteenth and twentieth centuries through a reading of representative authors.

Prerequisite: GE 202 or consent of instructor.

**GE 366 • 3 credits****Contemporary German Prose**

Recent developments in German literature as seen in the prose

literature in the Federal Republic of Germany and the German Democratic Republic, as well as in Austria and Switzerland. Material will be presented through reports, readings, and discussions in German. Prerequisite: GE 202 or equivalent.

**GE 374 • 3 credits****German Drama**

German drama from its beginnings to the present day through a reading of representative plays. Prerequisite: GE 202 or consent of instructor.

**GE 481 • 3 credits****Seminar in German**

An intensive study of a specific topic, such as a particular author or literary movement. The topic will vary from year to year so that the course may be repeated with credit.

Prerequisite: GE 311 or consent of instructor.

**GE 482 • 3 credits****Seminar in German**

Similar to GE 481 but with a different topic.

Prerequisite: GE 311 or consent of instructor.

**GE 495****Directed Studies****GE 496****Independent Study**

Individual study or research on a special topic under the direction of a staff member. Offered only on demand.

Prerequisite: Senior standing.



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### Italian Courses

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**LG 101 • 3 credits****Elementary Italian I**

Essentials of aural-oral, reading and writing usage of the target language with intensive drilling on pronunciation, intonation and grammar. Three recitations and one hour of laboratory per week.

**LG 102 • 3 credits****Elementary Italian II**

Continuation of LG 101

**LG 201 • 3 credits****Intermediate Italian I**

Review of grammar with composition and aural-oral practice. Extensive readings of cultural and literary value. Emphasis on practical application of grammar in conversations. Three recitations a week.

Prerequisite: LG 102 or equivalent.

**LG 202 • 3 credits****Intermediate Italian II**

Continuation of LG 201

**LG 211 • 3 credits****Textual Analysis**

Literary explication. Intensive readings with analysis of relationship between language and thought and form and content. Training in the writing of analytical critique. Course taught in English. Applied to all Foreign Literature and languages majors.

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### Linguistic Courses

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**LN 322 • 3 credits****Introduction to Linguistics**

The nature, development and structure of human speech. Topics studies include: phonetics, phonemics, morphology and syntax.

**LN 326 • 3 credits****Comparative Romance Linguistics**

This course traces the development of the Romance languages from Classical and Vulgar Latin to their present forms with attention to phonology, morphology and the lexicon. Recommended for majors in French, Portuguese, and Spanish. A previous knowledge of Latin is desirable but not required.

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### Latin Courses

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**LT 101 • 3 credits****Introductory Latin I**

The fundamentals of the Latin language with selected readings, designed especially for those majoring in English or foreign languages. The course will seek to develop a measure of oral ability in the language, as well as knowledge of the phonemics, morphology, and syntax of the declensional and conjugational systems.

**LT 102 • 3 credits****Introductory Latin II**

Continuation of LT 101.

**LT 201 • 3 credits****Intermediate Latin I**

A third semester of Latin, designed to develop skill in the reading of representative authors of the Golden Age (Catullus, Cicero, Nepos, Horace, Martial and others), with additional selections from the Patristic Period (Vulgate), and from the Medieval Period (Isidore of Seville, and the Venerable Bede).

**LT 202 • 3 credits****Intermediate Latin II**

A fourth semester course paralleling LT 201 but with more extensive selections, from Nepos, Horace and Phaedrus (Augustan Period): from the Epistolae of Pliny the Younger, mirroring Roman life, and from the Saturae of Martial: supplemented by other materials where feasible. While one purpose of LT 201-202 will remain the building of ability to translate, the endeavor will be made to foster reading of the Latin texts directly in the original, for personal enrichment and satisfaction.

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**Teaching Methods Course****ML 324 • 3 credits****Concepts of Foreign Language Teaching**

An analysis of methods and techniques on the teaching and learning of foreign languages. Examination of innovations in foreign language education. A study of the problems of language, subject matter, and materials inherent in bi-lingual education. Individual and group projects with application of theory to practice.

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## Portuguese Courses

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**PO 100 • 6 credits****Accelerated Elementary Portuguese**

Five classes per week — 2 language labs.

A one semester intensified and concentrated study of PO 101-102 for greater coverage and depth. Recommended for language majors and students interested in acquiring the skills of the language.  
Prerequisite: Consent of instructor.

**PO 101 • 3 credits****Elementary Portuguese I**

Essentials of aural-oral, reading and writing usage of the total language with intensive drilling on pronunciation, intonation and grammar. Three recitations and one hour of laboratory per week.

**PO 102 • 3 credits****Elementary Portuguese II**

Continuation of PO 101.

**PO 105 • 3 credits****Conversational Portuguese I**

An introductory course in the development of fluency in colloquial situations, particularly those relating to business, professional work, or education. Some attention to grammar. Relevant readings of cultural value.

**PO 106 • 3 credits****Conversational Portuguese II**

Continuation of PO 105.  
Prerequisite: PO 105 or consent of instructor.

**PO 200 • 6 credits****Accelerated Intermediate Portuguese**

Five classes per week — 2 language labs.

A one semester intensified and concentrated study of PO 201-202 for greater coverage and depth. Recommended for language majors and students in-

terested in developing the skills of the language.

Prerequisite: PO 100 or PO 101-102 and the consent of instructor.

**PO 201 • 3 credits****Intermediate Portuguese I**

Review of grammar with composition and aural-oral practice. Introduction to Portuguese and Brazilian culture and civilization through intensive and extensive reading. Three recitations and one hour of laboratory per week.  
Prerequisite: PO 102 or equivalent.

**PO 202 • 3 credits****Intermediate Portuguese II**

Continuation of PO 201.

**PO 203 • 3 credits****Portuguese Literature in Translation I**

Outstanding works of Portuguese literature through the twentieth century. Readings, lectures, and discussions in English.  
Prerequisite: E 102

**PO 204 • 3 credits****Brazilian Literature in Translation II**

Outstanding works of Brazilian literature of the nineteenth and twentieth centuries. Readings, lectures, and discussions in English.  
Prerequisite: E 102

**PO 205 • 3 credits****Intermediate Conversational Portuguese I**

Further development of fluency to deal with native speakers on everyday terms. More involved grammar. Relevant readings of cultural value.  
Prerequisite: A course in elementary Portuguese or consent of instructor.

**PO 206 • 3 credits****Intermediate Conversational Portuguese II**

Continuation of PO 205.

Prerequisite: PO 205 or consent of instructor.

**PO 301 • 3 credits****Portuguese Composition and Conversation**

Oral and written reports on everyday events. Emphasis placed on correct syntax and style.  
Prerequisite: PO 202 or equivalent.

**PO 302 • 3 credits****Portuguese Composition and Stylistics**

Through the appreciation and analysis of literary models and their structure and by emulation and extensive writing, the student improves his ability in self-expression and his critical judgment.  
Prerequisite: PO 301

**PO 312 • 3 credits****Culture and Civilization of Portugal**

Introduction to the cultural development of the Portuguese people throughout history. Lectures, class discussions, written and oral reports on significant aspects of Portuguese literary, social and artistic life.  
Prerequisite: PO 301 or equivalent.

**PO 314 • 3 credits****Culture and Civilization of Brazil**

The development of Brazil and its people from the colonial period to the present. Lectures, class discussions, written and oral reports on the significant aspects of Brazilian literary, social and artistic life.  
Prerequisite: PO 301 or equivalent.

**PO 325 • 3 credits**  
**Advanced Portuguese**  
**Grammar and Syntax**

A study of Portuguese grammar and its usage with extensive practice in composition.

Prerequisite: PO 202 or equivalent

**PO 331 • 3 credits**  
**Masterpieces of Portuguese**  
**Literature I**

Representative works of outstanding Portuguese authors, poets and dramatists from the Middle Ages to the classical period

Prerequisite: PO 302 or equivalent.

**PO 332 • 3 credits**  
**Masterpieces of Portuguese**  
**Literature II**

Selected works starting with the "arcadia" movement and continuing to the contemporary period

Prerequisite: PO 331 or equivalent.

**PO 333 • 3 credits**  
**Masterpieces of Brazilian**  
**Literature I**

The major literary works from the colonial period to Romanticism.

Prerequisite: PO 302 or equivalent.

**PO 334 • 3 credits**  
**Masterpieces of Brazilian**  
**Literature II**

The outstanding literary works from Realism to Modernism.

Prerequisite: PO 302 or equivalent

**PO 445 • 3 credits**  
**The Classical Period**

The literary works of the great national period of Portugal. Emphasis on the classical theatre and the *Lusiades*.

Prerequisite: PO 331-332 and consent of instructor.

**PO 446 • 3 credits**  
**The Classical Period: Prose**  
**and Poetry**

The literary works of the great national period of Portugal. Emphasis on poetry, the literature of discovery, and prose.

Prerequisite: PO 331-332 and consent of instructor.

**PO 455 • 3 credits**  
**Literature of the 19th and 20th**  
**Century I**

A study of Romanticism and Realism. The "Generation of Coimbra" is discussed, but Eca de Queiroz will be studied in PO 456.

Prerequisite: PO 331-332 and consent of instructor.

**PO 456 • 3 credits**  
**Literature of the 19th and 20th**  
**Century II**

A study of Realism with special emphasis on Eca de Queiroz and the contemporary movements.

Prerequisite: PO 331-332 and consent of instructor.

**PO 481 • 3 credits**  
**Seminar in Portuguese**

An intensive study of a specific topic, such as a particular author or literary movement. The topic will vary from year to year so that the course may be repeated with credit.

Prerequisite: PO 331-334 and consent of instructor.

**PO 482 • 3 credits**  
**Seminar in Portuguese**

Similar to PO 481 but with a different topic.

(A spring semester offering while PO 481 is for fall.)

Prerequisite: PO 331-332 or 333-334 and consent of instructor.

**PO 495**  
**Directed Studies**

**PO 496 • 2-4 credits**  
**Independent Study**

Intensive study or research on a specific topic in Portuguese or Brazilian studies, under the direction of a staff member.

Prerequisite: Senior standing.





## Russian Courses

### **RU 101 • 3 credits** **Elementary Russian I**

A study of the fundamentals of Russian grammar together with drills in pronunciation and reading. Conversation in Russian is introduced from the beginning. Various outside readings in Russian will introduce the student to Russian and Soviet culture. Three recitations and one hour of

laboratory per week.

### **RU 102 • 3 credits** **Elementary Russian II**

Continuation of RU 101.

### **RU 201 • 3 credits** **Intermediate Russian I**

This course will include a review of basic grammar and a study of more advanced syntax. Readings will serve as the basis for continued work in conversation and composition, and for the study of Russian and Soviet culture. Three recitations and one hour of laboratory per week. Prerequisite: RU 102 or equivalent.

### **RU 202 • 3 credits** **Intermediate Russian II**

Continuation of RU 201

**RU 203 • 3 credits**  
**Masterpieces of Russian Literature in Translation I**  
A survey of Russian literature from its beginning to 1870. Representative works of major authors will be read and discussed. Conducted in English. Three recitations per week. Prerequisite: E 102

**RU 204 • 3 credits**  
**Masterpieces of Russian Literature in Translation II**  
A survey of Russian literature from 1870 to the present. Representative works of major authors will be read and discussed. Conducted in English. Three recitations per week. Prerequisite: E 102

**RU 205 • 3 credits**  
**Russian for Biology Students I**  
Introductory readings in biological Russian from Soviet texts and edited published articles. Particular attention will be paid to scientific vocabulary. Prerequisite: RU 102

**RU 206 • 3 credits**  
**Russian for Biology Students II**  
Reading and translation of current articles from Soviet Periodicals in Botany, Ecology, Morphology, Physiology, Zoology and other areas. Prerequisite: RU 201 or RU 205.

**RU 301 • 3 credits**  
**Russian Conversation and Composition**  
Oral and written reports. Practical application of grammar, vocabulary building and introduction to style. Three recitations per week. Prerequisite: RU 202 or equivalent.

**RU 302 • 3 credits**  
**Russian Conversation and Composition**  
Continuation of RU 301.

**RU 303 • 3 credits**  
**Russian Expository Prose I**  
Readings in the humanities and social sciences from Soviet newspapers and journals. Special attention will be paid to journalistic syntax and acquisition of a core vocabulary. Prerequisite: RU 202

**RU 304 • 3 credits**  
**Russian Expository Prose II**  
Continuation of RU 303.

### **RU 495** **Directed Studies**

**RU 496**  
**Independent Study**  
Intensive study or research on a special topic under the direction of a staff member. Hours to be arranged. Prerequisite: Senior standing

## Spanish Courses

**SP 100 • 6 credits**  
**Accelerated Elementary Spanish**  
A one semester intensified and concentrated study of Elementary Spanish for greater coverage and depth. Recommended for language majors, minors, and students with established language skills. Five classes per week and 2 hours of language laboratory. Prerequisite: Consent of instructor.

**SP 101 • 3 credits**  
**Elementary Spanish I**  
Essentials of aural-oral, reading and writing usage of the target language with intensive drilling on pronunciation, intonation and grammar. Three recitations and one hour of laboratory per week.

**SP 102 • 3 credits**  
**Elementary Spanish II**  
Continuation of SP 101

**SP 200 • 6 credits**  
**Accelerated Intermediate Spanish**  
A one semester intensified and concentrated study of Intermediate Spanish for greater coverage and depth. Recommended for language major, minors, and students with established language skills. Five classes per week and 2 hours of language laboratory. Prerequisite: SP 100 or SP 102 and consent of the instructor.

**SP 201 • 3 credits**  
**Intermediate Spanish I**  
Review of grammar with composition and aural-oral practice. Introduction to Hispanic culture and civilization through intensive and extensive reading. Three recitations and one hour of laboratory per week. Prerequisite: SP 102 or equivalent.



**SP 202 • 3 credits**  
**Intermediate Spanish II**  
Continuation of SP 201

**SP 203 • 3 credits**  
**Spanish Literature in Translation I**

Outstanding works of Spanish literature through the eighteenth century. Readings, lectures, and discussions in English  
Prerequisite: E 102

**SP 204 • 3 credits**  
**Spanish Literature in Translation II**

Outstanding works of Spanish and/or Spanish-American literature of the nineteenth and twentieth centuries. Readings, lectures, and discussions in English.  
Prerequisite: E 102

**SP 301 • 3 credits**  
**Spanish Composition and Conversation**

Oral and written reports. Practical application of grammar, vocabulary building and introduction to style  
Prerequisite: SP 202 or equivalent

**SP 302 • 3 credits**  
**Spanish Composition and Stylistics**

Through the appreciation and analysis of literary models and their structure parts, and by emulation and extensive writing, the student improves his ability in self-expression and his critical judgment of style  
Prerequisite: SP 202 or equivalent

**SP 304 • 3 credits**  
**Advanced Composition and Conversation**

Abundant discussion and oral reports on current themes in the Hispanic world. Frequent compositions on topics found in Spanish and Spanish-American

periodicals and newspapers.  
Prerequisite: SP 301 or consent of instructor.

**SP 312 • 3 credits**  
**Culture and Civilization of Spain**

Introduction to the cultural development of the Spanish people throughout their history. Lectures, class discussion, written and oral reports, on the significant aspects of Spanish literary, social and artistic life.  
Prerequisite: SP 301 or consent of instructor.

**SP 314 • 3 credits**  
**Culture and Civilization of Latin America**

Lectures, class discussions, written and oral reports on the significant aspects of Latin American literary, social and artistic development from the period of discovery and colonization to present times.  
Prerequisite: SP 301 or consent of instructor.

**SP 325 • 3 credits**  
**Advanced Spanish Grammar and Syntax**

A systematic study of Spanish grammar with extensive practice in composition. Recommended for those planning to teach.  
Prerequisite: SP 202

**SP331 • 3 credits**  
**Masterpieces of Spanish Literature I**

The representative authors, poets and dramatists of Spanish literature from El Cantar de Mio Cid in the Middle Ages to Quevedo in the Baroque period.  
Prerequisite: SP 302-304 or consent of instructor.

**SP 332 • 3 credits**  
**Masterpieces of Spanish Literature II**

Selected plays, novels and poetry from the eighteenth century to

the contemporary period.  
Prerequisite: SP 302-304 or consent of instructor.

**SP 333 • 3 credits**  
**Representative Authors of Spanish American Literature I**

The main writers from the period of conquest and discovery in the New World to the development of Gaucho literature in the nineteenth century.  
Prerequisite: SP 302-304 or consent of instructor.

**SP 334 • 3 credits**  
**Representative Authors of Spanish American Literature II**

The major works from the pre-Modernist period in the nineteenth century to the contemporary period.  
Prerequisite: SP 302-304 or consent of instructor.

**SP 445 • 3 credits**  
**Spanish Poetry and Drama of the Golden Age**

The poetry of the Renaissance and Baroque periods together with the selected plays of Lope de Vega, Calderon de la Barca and Tirso de Molina.  
Prerequisite: SP 331-332 or consent of instructor.

**SP 446 • 3 credits**  
**Spanish Prose of the Golden Age**

The main authors of the sixteenth and seventeenth centuries with emphasis on the life and major works of Miguel de Cervantes.  
Prerequisite: SP 331 or consent of instructor.

**SP 455 • 3 credits**  
**Literature of the Nineteenth Century**

The main literary movements, romanticism, realism and naturalism are studied together with the representative works of outstanding authors, poets, and dramatists.  
Prerequisite: SP 331-332 or consent of instructor.

**SP 462 • 3 credits**  
**Contemporary Spanish Literature**

The leading writers of each literary form from the generation of 98 to the post-Spanish Civil War period.  
Prerequisite: SP 331-332 or consent of instructor.

**SP 481 • 3 credits**  
**Seminar in Spanish**

An intensive study of a specific topic or topics, such as a particular author, genre, or literary movement. The topic or topics will vary from year to year so that the course may be repeated with credit.  
Prerequisite: SP 331, 332 or SP 333, 334 and consent of instructor.

**SP 482 • 3 credits**  
**Seminar in Spanish**

Similar to SP 481 but with a different topic. (A spring semester offering while SP 481 is for fall.)  
Prerequisite: SP 331, 332 or SP 333, 334 and consent of instructor.

**SP 495**  
**Directed Studies**

**SP 496 • 2-4 credits**  
**Independent Study**

Intensive study or research on a special topic in Spanish or Spanish American literature under the direction of a staff member. Hours to be arranged.  
Prerequisite: Senior standing.

# History

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## Faculty and Fields of Interest

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**Dickinson Adams** • American Colonial, Jefferson

**Martin J. Butler** • American economic, local history

**Ann T. Carey (chairperson)** • Germany, modern Europe

**Robert M. Friedberg** • modern France, modern Europe

**Frederick V. Gifun** • Latin America, Iberia

**Kevin J. Hargreaves** • France, European intellectual

**Albert S. Hill** • modern France, modern Europe

**Tao-Chen Hsia** • China, Japan, Asia

**Gerard M. Koot** • modern

Britain, modern Europe

**Geraldine M. Phipps** • Russia, Eastern Europe

**Lester H. Rifkin** • U. S. social and intellectual

**M. C. Rosenfield** • Britain, medieval Europe

**Joseph N. Scionti** • Renaissance and Reformation, Italy

**John M. Werly** • twentieth century United States, urban America

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## History Major

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All history majors will be required to take 36 credits in history as indicated in Requirements below. Freshmen will normally not take courses above the 100 level. It is expected that each history major will consult regularly with his class advisor in formulating a program of study that will help to fulfill his educational and career goals.

### History Honors Program

The History Department offers an Honors Program for senior majors with a 3.3 cumulative average. In this program students write a research paper with a faculty member of their choice. For details on this program, students should consult their advisor.

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## Requirements

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At Least 6 hours of 100-level courses and 30 hours of history courses past the 100 level to be divided in the following manner:

	Semester Credits
United States history	6
European history	6
Other fields, to include Russia, Latin America, Asia, Near East, Africa	6
Either Historiography (HI 250) or a Seminar (400 level)	3
Electives	9

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## History Courses

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**HI 101 • 3 credits****History of Western Civilization I**

A survey of the growth of European civilization from ancient times to the end of the Middle Ages, including economic, social, political and intellectual developments.

**HI 102 • 3 credits****History of Western Civilization II**

A continuation of the study of European civilization from the end of the Middle Ages to the present, with emphasis on the origins and development of 20th century problems.

**HI 103 • 3 credits****History of Western Civilization with Films I**

This course will cover the traditional topics from classical Greece to the Renaissance. The course will be enriched with films of historical fiction.

**HI 104 • 3 credits****History of Western Civilization with Films II**

This course will cover the traditional topics from the Reformation to the present. The course will be enriched with films of historical fiction.

**HI 111 • 3 credits****Introduction to History I**

An introductory course dealing with selected topics in European and world history prior to the 20th century. Course content will vary with instructor.

**HI 112 • 3 credits****Introduction to History II**

An introductory course dealing with selected topics in European and world history in the modern period. Course content will vary with instructor.

**HI 115 • 3 credits****History of the United States I**

A survey of political, social, economic and diplomatic developments from colonial times to the Civil War. Continuity and change in domestic and foreign policies, and the role of individuals, movements and institutions will be emphasized.

**HI 116 • 3 credits****History of the United States II**

A continuation of the survey of American history, from the Civil War and Reconstruction to the present.

**HI 160 • 3 credits****Slavic Civilization**

Survey of the cultural, political and economic development of the Slavic peoples of Eastern Europe.

**HI 170 • 3 credits****Latin American Civilization I**

An introduction to the history, culture, and institutions of the regions of the Western Hemisphere colonized by Portugal and Spain. Considers the native American, European, and African elements of Latin American civilization from the pre-Columbian era to the wars for independence in the 1820's.

**HI 171 • 3 credits****Latin American Civilization II**

A survey of the independent nations of Latin America from the 1820's to the present. Emphasis on the process of legitimizing political authority, race and class, ideological influences, foreign economic penetration, revolution and the status quo, and development.

**HI 175 • 3 credits****Iberian Civilization I**

First of a two-semester survey of the societies and nations of the Iberian peninsula. Deals with

major formative influences, including the Roman and Arab-Berber contributions, state building, and the beginnings of empire, to 1640.

**HI 176 • 3 credits****Iberian civilization II**

A continuation of HI 175, from 1640 to the present. Traces the evolution of the modern nations of Spain and Portugal through their principal institutions, cultures, colonial empires, and economic development within Europe.

**HI 180 • 3 credits****Asian Civilization**

A survey of Asian culture, its origins in Chinese and Indian Civilizations, and its subsequent development. Emphasis on the historical, social and economic development of such newly independent Asian countries as Indonesia, Malaya, Singapore.

**HI 190 • 3 credits****African Civilization**

An introduction to the culture, history, and civilizations of the African continent, with special emphasis on sub-Saharan Africa. This one-semester survey is designed to acquaint the student with the principal themes of African history and development from pre-historic to modern times.

**HI 201, 202 • 3 credits****19th Century America I and II**

An interpretive analysis of American history from the early national period to the Spanish-American War.

**HI 203 • 3 credits****20th Century America I**

An interpretive analysis of the major American domestic and foreign policy trends from 1900 to 1945: Progressive Era, World War I, Red Scare, Roaring

Twenties, Depression, New Deal, World War II.

**HI 204 • 3 credits**

**20th Century America II**

An interpretive analysis of the major American domestic and foreign policy trends from 1900 to 1945: Progressive Era, World War I, Red Scare, Roaring Republicanism, New Frontiers, Great Society, Vietnam, Nixon Era.

**HI 205, 206 • 3 credits**

**Afro-American History I and II**

A survey of the role of Blacks in American history from the colonial period to the present. Emphasis on the role of Blacks in American life and culture.

**HI 215 • 3 credits**

**Massachusetts History**

A survey of the historical development of the state, within the context of New England and national historical trends. A wide variety of topics are treated in order to provide a broad appreciation of the factors which have contributed to the evolution of the modern state of Massachusetts and its people.

**HI 221 • 3 credits**

**History of Greek Civilization**

An introduction to the history of Greek Civilization, from Minoan and Mycenaean times to the Hellenistic period. Emphasis will be on cultural and intellectual developments in the social and political contexts.

**HI 222 • 3 credits**

**History of Roman Civilization**

A survey of Roman civilization from the origins of Rome to the age of Constantine.

**HI 223 • 3 credits**

**Medieval History**

A one-semester course on the transition of Europe during the

period from the end of the Classical World to the Renaissance. Emphasis on political development, social and economic change and the role of the Church.

**HI 225 • 3 credits**

**The Renaissance**

A survey of political, economic, and cultural developments in Europe from 1300 to 1500 with special emphasis on Italy.

**HI 226 • 3 credits**

**The Reformation**

A survey of the background of the Reformation, the religious changes of the period, the role of reformers such as Luther, Calvin and Zwingli, and the effects of reform between 1500 and 1648.

**HI 227 • 3 credits**

**Early Modern Europe, 1600-1815**

A survey of post-Renaissance European civilization to the 19th century. Emphasis on the growth of the modern state system, the origins of capitalist economies, the scientific revolution and Enlightenment, and the political history of the principal monarchies.

**HI 228 • 3 credits**

**History of Europe, 1815-1914**

The major political, economic, intellectual and social developments in Europe from the defeat of Napoleon to the outbreak of World War I.

**HI 229 • 3 credits**

**Europe in the 20th Century, to 1939**

A study of the forces shaping contemporary Europe. Attention will be paid to World War I and its impact, the Versailles settlement, liberalism and democracy in the 20th century, the challenge of totalitarian systems, and the

coming of the Second World War.

**HI 230 • 3 credits**

**Europe in the 20th Century, Since 1939**

A continuation of HI 229, with emphasis on World War II and its aftermath, the Cold War, Europe's loss of world domination, the movement toward the unity of Europe, and new intellectual and artistic trends.

**HI 250 • 3 credits**

**Historiography**

A one-semester course devoted to the study of history as a means to understanding human experience and development. Acquaints the student with source materials, research methods and problems of interpretation.

**HI 270 • 3 credits**

**Latin American - United States Relations**

Surveys the long history of contacts between Anglo and Latin America, with fullest emphasis on the era of national states and the evolution of the inter-American system. Economic, cultural, and political aspects of the relationship will be studied, up to the present.

**HI 271 • 3 credits**

**Latin America in World Affairs Since 1939**

Emphasizes the international outlook of the Latin American nations, their participation in international organizations, identification with the 'third world' and their relations with the major powers. Topics include: Latin America and the Cold War, development needs and strategies, sources and influence of foreign investment and technology, and the relation of these issues to United States hemispheric hegemony and anti-Americanism.

**HI 275 • 3 credits**

**Peasant Society and Revolution in Latin America**

Deals topically with two of the most fundamental and revealing characteristics of Latin American civilization: heirarchical/paternalistic rural social structures, and apparent political volatility. Popular assumptions about Latin American society and political life will be investigated and evaluated.

**HI 282 • 3 credits**

**China and the Far East**

A one-semester course introducing the history and geography of China, Japan and Korea. Emphasis on events since the establishment of relations with the West. The interrelations of the three principal Far Eastern states in modern times will be studied.

**HI 283 • 3 credits**

**Chinese Civilization and Culture**

This course covers general Chinese history and civilization from ancient times to the present. Emphasis on China's cultural contributions at times of both unity and disunity, and upon the characteristics of cultural change and continuity.

**HI 284 • 3 credits**

**Japanese Civilization and Culture**

A study of Japanese cultural and political development from ancient to modern times with emphasis on literature, religion and art.

**HI 300 • 3 credits**

**Topics in American History**

A critical analysis of selected topics or issues in American history which are not otherwise offered in the standard catalogue courses.





**HI 301 • 3 credits**  
**American Colonial History to 1689**

The British North American colonies from their origins to the period of expansion and development contemporaneous with the Glorious Revolution in England.

**HI 302 • 3 credits**  
**American Colonial History, 1689-1763**

The development of the British North American colonies from provincial outposts to mature societies ready for independence in 1763.

**HI 303 • 3 credits**  
**The American Revolution and the Founding of the Republic**  
The era of the Revolution: Consciousness of nationality, the War for Independence, government under the Articles of Confederation, and the making of the Constitution.

**HI 304 • 3 credits**  
**The Early National Period in American History, 1789-1815**  
The building of the American Republic from the adoption of the Constitution through the War of 1812.

**HI 305 • 3 credits**  
**The Age of Equalitarianism in American History**  
The American Republic from the Missouri Compromise through the Mexican-American War.

**HI 307, 308 • 3 credits**  
**American Social and Intellectual History I and II**  
A study of the major currents of thought — religious, social, and political — which have had an impact upon the development of American institutions and values.

**HI 309 • 3 credits**  
**American Economic History**  
A study of the history of the American economy in its development from the colonial period to the present.

**HI 311 • 3 credits**  
**Jefferson's Ideas in American History**  
Jefferson's life and thought and the use and modification of his ideas by succeeding generations of Americans from his death to the present.

**HI 312 • 3 credits**  
**American Maritime History**  
A one-semester course examining the development of the American merchant shipping industry since colonial times, and its role in American political, economic and cultural history.

**HI 313 • 3 credits**  
**Territorial Expansion of the United States**  
A comprehensive study of the economic, political and social factors involved in the Westward movement of the American people, from the French and Indian War to the 20th century.

**HI 314 • 3 credits**  
**History of Urban America**  
A survey of the emergence and development of the American city from 1607 to the present, focusing on the colonial city, immigration, nativism, industrialism, the political machine, the reformer, the emergence of the metropolis, and the ghetto.

**HI 320 • 3 credits**  
**Revolutions and Revolutionary Movements**  
Analysis and interpretation of various revolutionary movements in European and World history. Explores attempts by historians, sociologists, political theorists, and revolutionaries to understand

the nature and significance of revolutionary activity.

**HI 321 • 3 credits**  
**Ideas and Movements in 17th and 18th Century Europe**  
A survey of the intellectual history of Europe in the early modern period, including the growth of skepticism and the secularization of thought, the scientific revolution, the Enlightenment and the creation of a liberal climate of opinion, and the origins of modern political and economic theory.

**HI 322 • 3 credits**  
**Ideas and Movements in 19th and 20th Century Europe**  
An examination of such intellectual currents as romanticism, liberalism and conservatism, nationalism, socialism and capitalism, and social Darwinism. Attention will be paid to the development and maturation of these currents in the 19th century, and their modification in the 20th century.

**HI 323 • 3 credits**  
**War and Diplomacy in the Modern World: French Revolution to World War I**  
This course will analyze the causes, prosecution and impact of warfare prior to World War I, including international relations and technological advancements. Emphasis will be placed on the development of mass armies, the relationship between domestic politics and international war, the wars of imperialism, and the social and economic underpinning of modern warfare.

**HI 324 • 3 credits**  
**War and Diplomacy in the Modern World: World War I to the Present**  
A study of the military and diplo-

matic history of warfare since World War I. Emphasis will be placed on the relationship between the peace settlement and the causes of World War II, the Cold War, and post-World War II revolutionary warfare.

**HI 325 • 3 credits**  
**European Overseas Expansion, 1500-1800**  
Details European mastery of the oceans from the beginnings of long-distance trade with Africa to colonization and empire-building in Asia and the Americas. Emphasis on the pioneering activities of Portugal and the competing interests of Spain, the Netherlands, France, and England.

**HI 326 • 3 credits**  
**Modern Imperialism**  
An evaluation of both the theory and practice of European imperialism from 1800 to the present. In addition to a study of the major modern empires, the course will treat the phenomenon of decolonization and informal empire. Emphasis will be placed upon a comparison of the major explanations of European imperialism with its historical reality.

**HI 327 • 3 credits**  
**Topics in the History of Ideas**  
Treats the history of ideas as an interdisciplinary approach to both intellectual history and the history of European society. Topics will vary with the instructor.

**HI 328 • 3 credits**  
**Topics in the Social History of Modern Europe**  
Selected topics in European social history since the French Revolution. Topics will vary with the instructor.

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**HI 329 • 3 credits**

**Religion and Society in Early Modern Europe**

A survey of the impact of religious ideas and movements upon European history from the Reformation to the French Revolution. Examines the role of religious enthusiasm in the growth of revolutionary movements, in the rise of liberalism and capitalism, and in the political history and overseas expansion of the early modern states.

**HI 333 • 3 credits**

**English History I**

A survey of the history of England to the period of the Civil Wars and the Revolution of 1688, with attention to social, economic, political and cultural changes.

**HI 334 • 3 credits**

**English History II**

The history of England from the Revolution of 1688 to the present, tracing the change from an agricultural, rural society to a modern, industrial world power.

**HI 335 • 3 credits**

**19th Century Britain and the Empire**

An examination of the social, political, intellectual and economic transformation of Britain in the 19th century. Emphasis on social analysis of Victorian England, the evolution of the 19th century Empire, and the impact of empire upon internal developments.

**HI 336 • 3 credits**

**20th Century Britain and the End of Empire**

A survey of British history from 1900 to the present. Emphasis will be placed upon a study of the welfare state, the impact of the world wars, the end of empire, and contemporary English society.

**HI 337 • 3 credits**

**English Constitutional History**

A survey of the legal and constitutional development of England from the Anglo-Saxon settlement to the Reform Bill of 1832. Attention to documents and other contemporary materials (in English). Recommended for pre-law students.

**HI 341 • 3 credits**

**France to 1789**

A survey of French history in the 17th and 18th centuries. Topics include the rise of the Bourbon monarchy, the reign of Louis XIV, the growth of religious and political dissent, the struggle for European hegemony and overseas empire, the cultural influence of France in the Enlightenment, and the crisis of the old regime.

**HI 342 • 3 credits**

**French Revolution and Napoleon**

A study of the Revolutionary and Napoleonic periods in French history, from the crisis of the old regime to the restoration of the Bourbon monarchy. Emphasis will be placed on political change and the revolutionary transformation of French society.

**HI 343 • 3 credits**

**France in the 19th Century, 1815-1914**

This course will examine the many changes of regime in France, the impact of revolutionary and counter-revolutionary politics, the Franco-Prussian War and the Third Republic, France's empire, and the development of capitalism and industrialization.

**HI 344 • 3 credits**

**France in the 20th Century**

A study of the impact of two major wars, Vichy and the Resistance, the decline of the Third and the establishment of the Fourth and Fifth republics, loss of Empire, and changing economic and political conditions.

**HI 347 • 3 credits**

**History of Italy in the 19th Century**

A detailed study of the Risorgimento, or movement for Italian unification. Attention will be given to economic and cultural life as well as political events.

**HI 348 • 3 credits**

**History of Italy in the 20th Century**

An analysis of the rise and fall of Italian fascism, including a study of Italy's participation in both World Wars.

**HI 351 • 3 credits**

**History of Germany to 1786**

A study of the development of the Germanic states from the founding of the First reich in the 10th century to the death of Frederick the Great. Topics to be considered include: the development and nature of the medieval empire; the conflict with the Papacy; the Reformation; the Counter-Reformation; the spread of absolutism; the development of Prussia; the role of the Habsburgs in German affairs.

**HI 352 • 3 credits**

**History of Germany 1786 to 1890**

A study of Germany in the 19th century incorporating political, social and intellectual history. Topics to be considered include: the effects of the French Revolution and Napoleon on Germany; the Prussian reform movement; the growth of nationalism; important German phi-

losophers and historians; the revolutions of 1848; the role of Bismarck and the unification of Germany; Bismarck's foreign and domestic policy.

**HI 353 • 3 credits**  
**History of Germany from 1890 to 1933**

A study of Germany from the dismissal of Bismarck to the appointment of Hitler incorporating political, social and intellectual history. Topics to be considered in depth include: the nature of the Second Reich under William II; the effects of industrialization; the role of neo-romantic political thought; the growth of anti-Semitism; German foreign policy before World War I; World War I; the revolution of 1918; the development and collapse of the Weimar Republic.

**HI 354 • 3 credits**  
**History of Germany — 1933 to the Present**

A study of Germany from Hitler to the present day. Topics to be considered in depth include: the career and personality of Hitler; the growth of the Nazi Movement; the nature of the Nazi state; the origins of World War II; World War II; Germany's post-war recovery; the government, society and roles of the (West) German Federal Republic and the (East) German Democratic Republic.

**HI 361 • 3 credits**  
**Russia to 1855**

Survey of Russia from the 9th century to 1855. Stress will be given to political, social and economic developments.

**HI 362 • 3 credits**  
**Russia in Reform and Revolt, 1855-1918**

Survey of Russia from 1855 to 1918. Emphasis will be on the great reforms, political and economic changes, the rise of revolutionary movements, the Revolution of 1905 and the Revolution of 1917.

**HI 363 • 3 credits**  
**History of the Soviet Union**

Study of Russia from 1918 to the present. Stress will be given to the establishment of the Communist government, the Five Years Plans, and the social and cultural changes resulting from the adoption of Soviet ideology. Attention will be given to the role of Russia in the modern world.

**HI 364 • 3 credits**  
**Social and Cultural History of Russia**

Survey of social classes, the development of serfdom, religion, art and literature in Russia from the 9th century to the present.

**HI 365 • 3 credits**  
**Eastern European History**

The study of the Eastern European bloc from the Middle Ages to the present. Emphasis will be given to the political and economic development of these countries in the 19th and 20th centuries and the establishments of Communism in the post-World War II period.

**HI 374 • 3 credits**  
**Portugal and Spain in the 20th Century**

This course provides a vehicle for comparative study of modern Spain and Portugal. In this century, political and economic similarities are apparent, including abrupt termination of ancient monarchical regimes, decades of one-man fascist rule, and economic dependency with-

in Europe. Equal attention is given to the many cultural, linguistic, and historically-rooted differences which are politically significant indicators of regional diversity within the Iberian peninsula.

**HI 376 • 3 credits**  
**History of Brazil**

Emphasis on the period since independence in 1822. Topics include the empire and slavery, coffee, European immigration, the republic, race and class, foreign economic and ideological influences, and Brazil in the 1970's.

**HI 378 • 3 credits**  
**Slavery in the New World**

Deals with the trans-Atlantic slave trade and slavery in the Americas from the sixteenth to the nineteenth century. Emphasis on the beginning and development of the trans-Atlantic slave trade; moral issues, economics, and tactics of the trade; and, comparative study of the slave societies of Brazil, the Caribbean and the United States.

**HI 381 • 3 credits**  
**Modern Japan**

A survey of modern Japan since the 19th century, with emphasis on post-war Japanese politics and Japan's present role in world affairs.

**HI 382 • 3 credits**  
**Modern China**

A study of the major themes of modern Chinese history, including culturalism and nationalism, responses to the impact of the West, and the development of revolutionary ideology.

**HI 384 • 3 credits**  
**Vietnam and Southeast Asia**  
A study of the history of Vietnam and other Southeastern Asian countries from ancient times

through the European colonial period and settlement, to the present position of international crisis and conflict.

**HI 400-98 • 3 credits**  
**Seminars in History**

Seminars will be offered variously in such fields as United States history, United States social and intellectual history, European history, English history, Russian history, Latin American history, Asian history and history of ideas.

**HI 499 • 9 credits**  
**Honors Seminar**

The writing of an honors research paper.



# Mathematics

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## Faculty and Fields of Interest

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**John Chandy** • algebra

**Michael Crowley** • analysis

**Jerome Freier** • partial differential equations

**Warren M. Holt** • statistics

**Anthony J. John** (chairperson)  
• applied analysis

**James J. Kaput** • algebra

**Robert Kowalczyk** • probability  
and computer applications

**Robert McCabe** • analysis

**Walter Mierzejewski** • statistics

**Paul Parente** • applied  
mathematics

**Louis S. J. Simeone** • analysis

**Samuel A. Stone** • analysis

**Ronald Tannenwald** • analysis

**Fred Wolock** • statistics, operations  
research

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## Mathematics Major

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The mathematics program outlined below lists the minimum requirements for the degree of Bachelor of Arts in Mathematics. Students may elect to earn a Bachelor of Science degree provided that they take an additional six (6) credits of science (but only courses that the science departments themselves would credit to a major in their areas). Also, the humanities-social science requirements for the B.S. degree are reduced to a combined total of twelve (12) credits.

Throughout the first two years, students should consult fre-



quently with their departmental advisors and familiarize themselves with departmental activities.

The program for mathematics majors is designed to provide a solid foundation in the theoretical and applied aspects of mathematics necessary for a variety of professional careers. The requirements for the third and fourth years were established so that a mathematics major could concentrate in one of the following disciplines:

1. Preparation for secondary school teaching
2. Preparation for graduate school and
3. Preparation for business and industry.

At the end of the sophomore year, students aided by their faculty advisors should plan a course of study for the completion of the college program. The advanced courses selected during the third and fourth years should be consistent with the students' interests and goals.

### Requirements

First Year		Semester Credits	First	Second
MA 111	112	Analytic Geometry and Calculus I & II	4	4
MA 131		Introductory Mathematics	3	
MA 132		Introduction to Computers and their Application to Mathematics		3
E 101	102	Freshman English	3	3
		Humanities or Social Sciences	3	3
		Unspecified Electives	3	3
			16	*6
Second Year		Semester Credits	First	Second
MA 211		Analytic Geometry and Calculus III	4	
MA 212		Differential Equations		3
MA 221		Linear Algebra	3	
MA 261		Foundations of Mathematics		3
PH 111	112	Physics I and II	3	3
PH 121	122	Physics Laboratory	1	1
		Literature	3	3
		Humanities or Social Science	3	3
			17	16
Third Year		Semester Credits	First	Second
		Mathematics Electives*	6	6
		Humanities or Social Science	3	3
		Unspecified Electives	6	6
			15	15
Fourth Year		Semester Credits	First	Second
		Mathematics Electives*	3	3
		Humanities or Social Science	6	3
		Unspecified Electives	4	6
			*3	12

\*The 18 credits (6 courses) of mathematics electives in the third and fourth years must be chosen from among courses on the following list. Three credits may be waived for students in a teaching internship program.

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## Mathematics Electives

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MA 201		Analytic Geometry, T*
MA 242		Theory of Numbers
MA 209		Modern Mathematics for Secondary School Teachers, T
MA 311	312	Advanced Calculus I, II, T, G, A
MA 321	322	Topics in Applied Mathematics I, II, A
MA 331		Statistical Methods I, A
MA 332		Statistical Methods II, A
MA 341		Numerical Analysis, G, A
MA 351		Differential Equations II, A
MA 421		Functions of a Complex Variable, G, A
MA 441	442	Modern Algebra I, II, G, A
MA 443		Applied Modern Algebra, A
MA 451		Differential Geometry, G
MA 452		Higher Geometry, T
MA 461		Elementary Topology, G
MA 471		Probability, G, A
MA 472		Mathematical Statistics, G, A
MA 487		Math Inquiry I, A
MA 488		Math Inquiry II, T
MA 499		Selected Topics in Mathematics

### Code

T — recommended for students preparing to teach

G — recommended for students preparing for graduate school

A — recommended for students in applied math

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The mathematics department shall offer its electives according to the following schedule.

Beginning September 1977 (and all odd years)		Beginning September 1978 (and all even years)	
Fall Semester	Spring Semester	Fall Semester	Spring Semester
MA 311	MA 312	MA 311	MA 312
MA 321	MA 322	MA 321	MA 322
MA 331	MA 332	MA 331	MA 332
MA 441	MA 442	MA 441	MA 443
MA 209	MA 242	MA 201	MA 451 or MA 452
MA 341	MA 351	MA 461	MA 421
	MA 487		MA 488

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### Graduate Program

The graduate program in mathematics is intended to be a terminal course in mathematics that is useful for both industry and teaching. A student beginning study for an M.S. in mathematics will meet with a faculty advisor, and a program of study will be developed. It is expected that the courses will be basically from the applied mathematics offerings, although theory courses will be available. Also, the student will

be allowed to take courses in computer science (at the graduate level) which are offered in the Department of Electrical Engineering (maximum of 6 hours, except by special permission). Students receiving their M.S. degrees will be prepared for work in industry, with applied courses of use in industry, such as Statistics, Operations Research, Mechanics and Computer Science.



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## Mathematics Courses

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### **MA 101 • 3 credits** **Elements of College** **Mathematics I**

MA 101, 102 is a terminal course for students whose curriculum calls for one year of mathematics; it is also a prerequisite for MA 231. The first semester covers selected topics from finite mathematics including set theory, matrix algebra, and linear programming (using geometric and matrix methods).

### **MA 102 • 3 credits** **Elements of College** **Mathematics II**

Topics from continuous mathematics including elementary functions and an introduction to differential and integral calculus. Prerequisite: MA 101

### **MA 105 • 3 credits** **Technical Calculus I**

First semester of a four-term calculus sequence required of technology students and recommended for non-physical science majors desiring a basic introduction to analysis. The first term will review those topics from algebra and trigonometry needed in the sequel. Then the basic concepts of the differential calculus will be studied.

### **MA 106 • 3 credits** **Technical Calculus II**

Continuation of MA 105. Further study of algebraic and transcendental functions of one variable and topics from the integral calculus of these functions. Prerequisite: MA 105

### **MA 107 • 3 credits** **Modern Math for Elementary** **Teachers I**

A course designed to enable teachers to cope with the problems of the changing modern mathematics curriculum. Current issues, attitudes and learning theories will be studied, including

the mathematical foundations of the elementary school curriculum. The course is classroom oriented and makes heavy use of films and lab materials.

### **MA 108 • 3 credits** **Modern Math for Elementary** **Teachers II**

Continuation of MA 107. Prerequisite: MA 107 or MA 507.

### **MA 111 • 4 credits** **Analytic Geometry and** **Calculus I**

First semester of a four term sequence required of majors in mathematics, the physical sciences and engineering. Recommended for others desiring a thorough background in elementary analysis. Term I will cover topics in analytic geometry, the concepts of function and limit, continuity, differentiability and integrability of elementary algebraic and transcendental functions. Techniques of differentiation and applications will then be studied.

### **MA 112 • 4 credits** **Analytic Geometry and** **Calculus II**

Continuation of MA 111. Topics from the integral calculus, stressing techniques of integration (including numerical methods). Infinite series. Prerequisite: MA 111.

### **MA 131 • 3 credits** **Introductory Mathematics**

A course required of mathematics majors and recommended for others desiring the necessary background needed to achieve success in MA 111. The course will cover selected topics from algebra, trigonometry, analytic geometry and finite mathematics.

### **MA 132 • 3 credits** **Introduction to Computers and**

### **their Application to** **Mathematics**

Required of mathematics majors and highly recommended for all students in the physical, natural, and behavioral sciences. The course covers topics in computer fundamentals, programming languages (stressing FORTRAN and APL), mathematical problem formulation and the solution of numerical and non-numerical problems. Students will write several programs to find solutions to various elementary mathematical problems.

### **MA 201 • 3 credits** **Analytic Geometry**

This course is designed primarily for mathematics majors who plan to teach in a secondary school. The course will cover polynomial functions, translation and rotation of axes, curve sketching, curve fitting, parametric equations, polar, cylindrical and spherical coordinates, surfaces and loci. Prerequisite: MA 112

### **MA 203 • 3 credits** **Technical Calculus III**

Continuation of MA 106. Topics include conic sections, polar coordinates, functions of two variables, partial differentiation, multiple integration and infinite series. Prerequisite: MA 106

### **MA 204 • 3 credits** **Elementary Differential** **Equations**

Techniques in the solutions of ordinary differential equations, and applications from engineering. Similar to MA 212 with less emphasis on theory and more on applications. The natural continuation of MA 203. Prerequisite: MA 203

### **MA 209 • 3 credits** **Modern Math for Secondary**

### **School Teachers I**

Designed for present and future teachers, the course emphasizes nemistics and problem-solving. Included will be critical readings and discussion of past and present trends in the teaching of mathematics at the secondary level.

### **MA 210 • 3 credits** **Modern Math for Secondary** **Teachers II**

Continuation of MA 209.

### **MA 211 • 4 credits** **Analytic Geometry and** **Calculus III**

Continuation of MA 112. Two and three dimensional vectors, partial differentiation, multiple integrals and applications. Prerequisite: MA 112

### **MA 212 • 3 credits** **Differential Equations I**

Continuation of MA 211. Ordinary differential equations of the first order, linear differential equations of the  $n$ th order, some non-linear second order equations, series solutions and Laplace Transforms.

### **MA 221 • 3 credits** **Linear Algebra**

Required of all second year mathematics majors and strongly recommended for students in the physical, natural, behavioral and management sciences. Course material includes vectors, linear transformations, matrices and determinants.

### **MA 231 • 3 credits** **Elementary Statistics**

Collection and presentation of data. Frequency distributions and measures of central tendency. Introduction to probability, estimation, statistical inference and sampling. Prerequisite: MA 102

**MA 232 • 3 credits**  
**Introduction to Decision Theory**

Continuation of MA 231. Regression and correlation analysis. Analysis of variance. Goodness-of-fit tests. An introduction to Bayesian decision methods.  
Prerequisite: MA 231

**MA 242 • 3 credits**  
**Theory of Numbers**

Prime numbers, congruences, quadratic residues, diophantine equations and other topics.

**MA 261 • 3 credits**  
**Foundations of Mathematics**

Required of all second year mathematics majors and recommended for students wishing an insight to the rudiments of abstract mathematics. Retracing of geometry and other topics from an advanced view point. Discussion of the axiomatic method, and a development of a small mathematical system.  
Prerequisite: Consent of instructor.

**MA 271 • 3 credits**  
**Descriptive Astronomy I**

The course covers a survey of Astronomy from ancient to modern times. Emphasis is placed on study of the solar system, the stars and galaxies with special emphasis on a study of the Milky Way. Physical laws including the laws of thermodynamics and radiation are studied and applied. The course concludes with a survey of modern cosmological theories. Telescopic observations will be taken as conditions permit.  
Prerequisite: MA 102 or MA 111.

**MA 272 • 3 credits**  
**Descriptive Astronomy II**  
Continuation of MA 271.  
Prerequisite: MA 271

**MA 311 • 3 credits**  
**Advanced Calculus I**

A rigorous analysis of the concepts of limits, continuity, the derivative, the Riemann integral, series, uniform convergence, functions of several variables, Fourier series, improper integrals, line and surface integrals.  
Prerequisite: MA 212

**MA 312 • 3 credits**  
**Advanced Calculus II**  
Continuation of MA 311  
Prerequisite: MA 311

**MA 321 • 3 credits**  
**Topics in Applied Mathematics I**  
Series solutions of differential equations, vector analysis, solution of partial differential equations of mathematical physics and an introduction to the applications of complex analysis.  
Prerequisite: MA 212

**MA 322 • 3 credits**  
**Topics in Applied Mathematics II**  
Continuation of MA 321.  
Prerequisite: MA 321

**MA 331 • 3 credits**  
**Statistical Methods I**  
A calculus-based introduction to statistics. Probability and combinatorial problems. Discrete and continuous random variables. Various distributions including the binomial, Poisson, hypergeometric normal, gamma and chi-square. Moment generating functions, transformations and sampling distributions.  
Prerequisite: MA 112

**MA 332 • 3 credits**  
**Statistical Methods II**  
Continuation of MA 331.  
Classical estimation methods. Hypothesis testing. Chi-square tests for goodness-of-fit and independence. Regression and

correlation analysis. One way and two-way analysis of variance including factorial designs and tests for the separation of means.  
Prerequisite: MA 331

**MA 341 • 3 credits**  
**Numerical Analysis**  
Theory and computer-oriented practice in obtaining numerical solutions of various problems. Topics include solutions of non-linear equations, interpolation and function approximation, numerical integration and system of linear equations.  
Prerequisite: MA 212

**MA 351 • 3 credits**  
**Differential Equations II**  
It is recommended that this course be taken after MA 341. Topics include numerical solutions of ordinary and partial differential equations and boundary-value problems.  
Prerequisite: MA 212

**MA 421 • 3 credits**  
**Complex Analysis**  
Analytic functions, differentiation, integration, conformal mapping, calculus of residues and infinite series.  
Prerequisite: MA 312

**MA 441 • 3 credits**  
**Modern Algebra I**  
The study of relations, functions, groups, rings and fields.

**MA 442 • 3 credits**  
**Modern Algebra II**  
Continuation of MA 441.  
Prerequisite: MA 441.

**MA 443 • 3 credits**  
**Applied Modern Algebra**  
Finite state machines and algebraic coding theory. Applications to Computer and information science.  
Prerequisite: MA 441

**MA 451 • 3 credits****Differential Geometry**

Analysis of curves and surfaces. Frenet-Serret formulae. First and second fundamental forms for surfaces. Gaussian and mean curvature. Theorems of Meusnier, and Rodrigues. Gauss-Bonnet Theorem.

Prerequisite: MA 312

**MA 452 • 3 credits****Introduction to Higher Geometry**

A survey of the history of geometry, emphasizing the scholars of antiquity. Topics from modern (college) geometry, projective and non-Euclidean geometries.

Prerequisite: MA 211

**MA 461 • 3 credits****Elementary Topology**

An introduction to point-set combinatorial topology.

Prerequisite: MA 312

**MA 471 • 3 credits****Probability**

Review of topics in MA 331 at a more advanced mathematical level, and an introduction to Stochastic Processes.

Prerequisite: MA 332

**MA 472 • 3 credits****Mathematical Statistics**

Review of topics in MA 332 at a more advanced mathematical level, and from a decision theoretic point of view.

Prerequisite: MA 471

**MA 487 • 3 credits****Mathematical Inquiry I**

Course is conducted as a seminar. An elementary question is posed to the students who must generate their own mathematics in an attempt to find a solution. The aim is to develop student independence and creativity.

Prerequisite: MA 212

**MA 488 • 3 credits****Mathematical Inquiry II**

A second semester of inquiry, independent of the first.

Prerequisite: MA 212

**MA 499 • 3 credits****Selected Topics in Mathematics**

A special course to meet the needs of students for material not encountered in other courses. Topics dealt with require the approval of the departmental chairman.

Prerequisite: MA 212 and permission of department.

**MA 501 • 3 credits****Functions of a Complex Variable I**

This course consists of integration, differentiation, analytic continuation and power series of functions of a complex variable. Also included are entire and meromorphic functions, residue theory and conformal mapping with applications.

Prerequisite: Permission of department.

**MA 502 • 3 credits****Functions of a Complex Variable II**

Continuation of MA 501.

Prerequisite: MA 501.

**MA 505 • 3 credits****Probability**

A rapid but thorough presentation of Combinatorial Analysis and Discrete Probabilities Distribution Theory and the mathematical foundations of probability from a measure, theoretic point of view. Introduction to stochastic processes.

Prerequisite: Permission of department.

**MA 506 • 3 credits****Decision Theory**

Statistical inference from a decision theory point of view. A mathematical and philosophical discussion of the foundations of Bayesian Statistics and Decision Theory, with applications to illustrate the process of decision making.

Prerequisite: MA 505

**MA 511 • 3 credits****Algebra I**

Groups, rings, Galois Theory, Unique Factorization domains.

Prerequisite: Permission of department.

**MA 512 • 3 credits****Algebra II**

Modules, Multilinear Algebra.

Prerequisite: Permission of department.

**MA 521 • 3 credits****Probability**

Continuation of MA 471, with emphasis on Combinatorial Theory, and greater extension into Markov Chains, and Stochastic Processes, such as Poisson, Pure Births, Birth and Death, Exponential Holding Times, and Waiting Line and Servicing Problems. Distribution Theory and discussion of change of variable technique, with applications to special distributions.

Prerequisite: Permission of department.

**MA 522 • 3 credits****Statistics**

Theory of estimation, with discussion of Interval Estimation, Order Statistics, Limiting Distributions, Sufficient Statistics, Point Estimation, and Statistical Hypotheses. Introduction to other Statistical theory such as Analysis of Variance, Linear Statistical Models, and Non-Parametric Statistics.

Prerequisite: Permission of department.

**MA 531 • 3 credits****Ordinary Differential Equations**

Review of elementary methods of integration of first-order, second-order linear, and  $n$ th order linear constant-coefficient differential equations. Theorems of existence, uniqueness and continuity, in the small and in the large. Study of plane autonomous systems. Approximate solutions and the theory of effective numerical integration. Sturm-Liouville theory.

**MA 541 • 3 credits****Operations Research I**

A study of Mathematical Programming, including Linear Programming in a variety of situations, sensitivity analysis, and network analysis. Dynamic Programming with relation to Linear Programming and Network Analysis, as well as special Dynamic Programming Techniques. Introduction to Applied Probability problems.

Prerequisite: Permission of department.

**MA 542 • 3 credits****Operations Research II**

Continuation of Operations Research I with particular emphasis on Queuing Problems, Inventory Theory, Applied Markov Processes, and Simulation. Special topics in the Mathematical Programming, such as Integer and Non-Linear Programming.

Prerequisite: MA 541

**MA 551 • 3 credits****Calculus of Variations**

Variational problems without constraints. Gateaux variation of a functional. Weak and strong relative extreme values. The Euler-Lagrange equations. Transversality conditions. Hamilton-Jacobi theory and Pontryagin's Maximum Principle with applications to optimal control problems. The LaGrange multi-



plier rule for the problem of Meyer and its application to the problem of Lagrange and the isoperimetric problem. The Weierstrass excess function and Legendre's necessary condition for a weak relative minimum. Prerequisite: Permission of department

**MA 552 • 3 credits**  
**Integral Equations**

Volterra equations of the first and second kind and their relationship to linear differential equations. Fredholm's equation with Pincherle-Goursat Kernels. The Fredholm theorem for general kernels. Numerical solution of integral equations. The Fredholm solution of the Dirichlet problem. Symmetric kernels and orthogonal systems of functions. Prerequisite: Permission of department.

**MA 601 • 3 credits**  
**Functions of a Real Variable I**

This course consists of topics in modern analysis including measure theory, Tiemann, Lebesgue and Stieltjes integrals. Applications to orthogonal expansions are given. Prerequisite: Permission of department.

**MA 602 • 3 credits**  
**Functions of a Real Variable II**  
Continuation of MA 601  
Prerequisite: MA 601.

**MA 603 • 3 credits**  
**Functional Analysis**  
Review of Lebesgue Integral. Study of specific examples of Hilbert and Banach Spaces. Abstract characterization of spaces. Applications to integral equations and partial differential equations. Prerequisite: MA 602

**MA 611 • 3 credits**  
**General Topology**

The basic aspects of general topology are studied. Among the topics considered are axiomatic set theory, metric spaces, compactness, continuous mappings. Prerequisite: Permission of department.

**MA 612 • 3 credits**  
**Combinatorial Topology**

The combinatorial aspects of topology are studied. The topics include group properties, homology, homotopy and manifolds. Prerequisite: Permission of department.

**MA 621 • 3 credits**  
**Partial Differential Equations**

First order differential equations are studied. Higher order equations are classified into elliptic, hyperbolic and the general properties of each type are studied. Existence and uniqueness theorems are given. Prerequisite: Permission of department.

**MA 622 • 3 credits**  
**Partial Differential Equations**  
Continuation of MA 621.  
Prerequisite: MA 621

**MA 645 • 3 credits**  
**Group Theory**  
Subgroups, homomorphisms, and isomorphism theorems; finite groups, p-groups, solvable and nilpotent groups; free groups, free products, group extensions and homological algebra. Prerequisite: Permission of department.

**MA 647 • 3 credits**  
**Theory of Rings**  
Prerequisite: MA 645

**MA 652 • 3 credits**  
**Topics in Numerical Analysis II**

**MA 670 • 3 credits**  
**Methods of Mathematical Physics and Engineering I**

**MA 671 • 3 credits**  
**Methods of Mathematical Physics and Engineering II**

**MA 701**  
**Seminar**

**MA 702**  
**Seminar**

**MA 651 • 3 credits**  
**Topics in Numerical Analysis I**

# Medical Technology

## Faculty and Fields of Interest

**Joan Felder** (chairperson)  
• human genetics, health education, and professional organizations

**James Griffith** • microbiology, health legislation, and quality control

Graduates in Medical Technology are eligible for national certification. Careers are available in hospital, industrial, public health and private laboratories as scientists, researchers, educators and administrators as well as in educational institutions and

health care agencies. Graduate opportunities are available.

## Requirements

First Year			Semester Credits	First	Second
MT	211	Medical Technology Seminar		1	
BO	221 222	Anatomy & Physiology		3	3
CH	151 152	Principles of Modern Chemistry		3	3
CH	163 164	Quantitative (Analytical) Chemistry		2	2
MA	101 102	Elements of College Mathematics		3	3
or					
MA	111 112	Analytical Geometry and Calculus			
E	101 102	Freshman English		3	3
Second Year			Semester Credits	First	Second
CH	251 252	Organic Chemistry		3	3
CH	265 266	Organic Chemistry Laboratory		2	2
		Humanities/Social Sciences/Literature		3	3
MT	315	Human Genetics		3	
Third Year			Semester Credits	First	Second
PH	101 102	General Physics		3	3
MT	301	General Microbiology		4	
MT	302	Medical Bacteriology			4
MT	311 312	Seminar		2	2
		Humanities/Social Sciences/Literature		6	6

Ninety credits are required prior to entering the Hospital School of Medical Technology

Fourth Year		Courses to be taken in affiliated hospital schools of Medical Technology	Semester Credits
MT	401	Clinical Microbiology I	4
MT	402	Clinical Microbiology II	4
MT	409	Immunohematology I	2
MT	410	Immunohematology II	2
MT	419	Clinical Biochemistry I	4
MT	420	Clinical Biochemistry II	4
MT	429	Hematology I	3
MT	430	Hematology II	3
MT	439	Clinical Microscopy	2
MT	449	Special Laboratory I	2
MT	450	Special Laboratory II	2

No student will be assigned to the fourth year program in an affiliated hospital unless he has a cumulative grade point average of 2.5 or better and has the approval of the Department Affiliations Committee. The university cannot guarantee placement in the fourth year clinical affiliates.

## Medical Technology Courses

### MT 211 • 1 credit

#### Medical Technology Seminar

This is a basic orientation to the field of laboratory medicine. The speciality areas of medical laboratory science, manpower problems, upward mobility, professional organizations, accreditation, certification, the team concept and professionalism are discussed.

Lecture - discussion - demonstration 1 hour

Required of medical technology freshmen and transfer students.

### MT 301 • 4 credits

#### General Microbiology

This course presents the basic concepts of physiology, genetics, morphology, ecology, systematics and control of microorganisms. Laboratories shall supplement lecture presentations, stressing basic instrumentation and laboratory technique.

Lecture 3 hours/Laboratory 4 hours.

Prerequisite: CH 251 or permission of instructor.

### MT 302 • 4 credits

#### Medical Bacteriology

This course presents the theoretical basis for an in-depth understanding of organisms of medical importance. Stress shall be placed on bacterial physiology as it relates to disease. Quality control statistical methods and current literature shall be analyzed.

Lecture 3 hours/Laboratory 4 hours.

Prerequisite: MT 301

### MT 303 • 3 credits

#### Clinical Microbiology

Man as an ecosystem. Host parasite relationships. Microbe's social impact on populations. Preventative medicine and the rationality of various defenses against infectious diseases;

vaccines, antibiotic therapy and hospitalization. The study of major clinical entities such as pneumonias, meningitis, diarrheas, mycobacterioses, treponematodes and the emergence of man-produced infections completing the cycle of "life on man."

### MT 311 • 2 credits

#### Medical Technology Seminar I

Selected topics shall be presented and discussed by the students. Topics will be announced in advance of the seminar.

Attendance at professional seminars, some of which are held in the evenings and/or on weekends are an integral part of this course.

Seminar 2 hours.

Prerequisite: Junior or senior standing.

### MT 312 • 2 credits

#### Medical Technology Seminar II

Selected topics shall be presented by both faculty and students. Topics shall be submitted from affiliated hospitals.

Seminar 2 hours.

Prerequisite: Junior or senior standing.

### MT 316 • 3 credits

#### Human Genetics

This course presents an intense survey of genetic mechanisms emphasizing the effect on human inheritance and disease.

Lecture 3 hours.

### MT 400 • 3 credits

#### Clinical Immunobiology

Human emphasis on the emerging concept of immunobiology. Immunogens and the nature of the immune response. Current methods for immunological diagnosis and research. Applications to immunohematology, transfusion and developmental fetal immunology. Different immunological phenomenon associated with diseases, infections, autoimmunity organs, Hemolytic and genetic. Human immunological manipulations, ethics, adaptive and immunosuppressive immunity. Transplantation. Role of immunotherapy in relation to surgery, chemotherapy and radiation. Cancer immunotherapy. Future applications.

### MT 430 • 3 credits

#### Hematology II

Continuation of MT 429.

### MT 439 • 2 credits

#### Clinical Microscopy

Emphasis shall include the applied principles of the clinical evaluation of the physical and chemical constituents and formed elements of kidney filtrate. Quality control, laboratory safety and clinical correlation shall be covered.

### MT 449 • 2 credits

#### Special Lab I

The course content will vary according to special areas of investigation in each of the affiliated hospitals. More intensive study and performance of selected topics such as serology, nuclear medicine, cytogenetics, virology and toxicology shall be included.

### MT 450 • 2 credits

#### Special Lab II

Same as MT 449.

### MT 460 • 3 credits

#### Clinical Chemistry Applied to Diagnostic Techniques

Emphasis will be placed on the application of clinical chemistry for the elucidation of disorders of various homeostatic systems, on the comparative analysis of normal and abnormal body fluids, on the collection and handling of specimens, on the evaluation of available methodology and on future trends in clinical chemistry.

### MT 495 • 1-4 credits

#### Directed Study in Medical Technology

The student selects a topic for in-depth study. Readings and reports are supervised by a member of the faculty.

Terms and hours to be arranged. Prerequisite: Permission of instructor.

### MT 496 • 1-4 credits

#### Continuation of MT 495

### MT 497 • 2 credits

#### Research Project

The student initiates a proposal on a selected research topic. The research is done under the supervision of the appropriate faculty member. A completed paper is required. Four hours per credit hour per week.

Prerequisite: Permission of instructor.

### MT 498 • 1-4 credits

#### Research Project Continuation of MT 497.





The following courses are presented at affiliated hospitals for an academic year consisting of 50 40-hour weeks. Lecture and laboratory hours shall comply with standards set by the National Accrediting Agency for Clinical Laboratory Sciences. Prerequisite: Senior standing. Medical Technology Majors only. Admission to program by consent of the Department of Medical Technology and acceptance to an affiliated hospital.

**MT 401 • 4 credits**  
**Clinical Microbiology I**

Emphasis is placed on the principles of practice of diagnostic microbiology such as specimen collection and handling, quality control, and laboratory safety. Clinical correlation, immunology and hospital surveillance will be included.

**MT 402 • 4 credits**  
**Clinical Microbiology II**  
Continuation of MT 401.

**MT 409 • 2 credits**  
**Immunohematology I**

The principles of blood banking, including the preparation and storage of blood and its components, donor evaluation, transfusion, required record keeping, and processing of frozen blood, shall be emphasized. Clinical correlation, quality control and laboratory safety will be included.

**MT 410 • 2 credits**  
**Immunohematology II**  
Continuation of MT 409.

**MT 419 • 4 credits**  
**Clinical Biochemistry I**

Topics will include principles of the physical and chemical analysis of medically significant organic and inorganic substances found in human body fluids and tissues. Laboratory instrumentation and electronics, metabolic screening, specimen collection, clinical correlation, quality control and laboratory safety will be emphasized.

**MT 420 • 4 credits**  
**Clinical Biochemistry II**  
Continuation of MT 419.

**MT 429 • 3 credits**  
**Hematology I**

Subjects include the analysis and clinical correlation of quantitative and qualitative variations in blood. Blood cell and other formed element morphology, the dynamics of coagulation, processing and evaluation of human bone marrow, quality control and laboratory safety shall be studied.

## Multidisciplinary Studies Degree

The Multidisciplinary Studies Degree affords a student the opportunity to design an individual program around a specific goal (Pre-Medicine, Pre-Law, etc.) or problem (Ethnic Studies, Urban Studies, Environmental Studies, etc.) This program is limited to students in the College of Arts and Sciences. However, this does not limit the student to courses offered only in the College of Arts and Sciences.

The requirements for the Multidisciplinary Studies Degree are as follows:

1. General requirements for the B.A. Degree (or B.S. Degree, as the case may be) must be satisfied
2. The student must, in lieu of Department Chairman, obtain a faculty member to act as his program advisor.
3. To enroll as a candidate for a Multidisciplinary Studies Degree, the student must, by no later than the end of his Junior year, file with the Dean of the College a proposal which has been approved by a faculty advisor and which includes a minimum of 30 credits in advanced courses, thus creating his own "major". The student becomes a candidate for the Multidisciplinary Studies Degree when the proposal is approved by the Dean.
4. Any subsequent changes in the recognized program of studies must be approved by the student's advisor and by the Dean.



# Philosophy

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## Faculty and Fields of Interest

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**John Fitzgerald** • classical American philosophy (Peirce, James, Dewey), philosophy of human nature, ethics

**Richard Hogan** • ancient philosophy (especially Plato), analytic philosophy, history of philosophy, Nietzsche

**Theodora Kalikow** (chairperson) • history and philosophy of science (especially biology & ethology), philosophy of mind, analytic philosophy, philosophy of feminism

**James Place** • Hegel, Marx, Freud, Merleau-Ponty, Sartre, Husserl, Heidegger; aesthetics, phenomenology, existentialism, structuralism

**Lura Teeter** • logic, theory of knowledge, philosophy of language, aesthetics, Kant

**Thomas Wassmer** • ethics, bioethics, meta-ethics, metaphysics, political philosophy, philosophy of religion, philosophy of law, medieval philosophy, modern philosophy, business ethics

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## Philosophy Major

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Philosophy as a major field for undergraduates includes the study of at least three areas:

1. understanding of systematically related questions posed by all human beings - such questions as those of morality, of knowledge, of art, of science, of history, of language, of religion;
2. history of western Philosophic thought and
3. familiarity with the work of present-day philosophers.

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## Requirements

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Selection of Philosophy as a major field requires 32 hours credit averaging at least 2.0 from those courses listed below in the department. Departmental courses must include PI 221 and 222, at least four courses in systematic philosophy (300 to 349) two courses in contemporary philosophy (361 to 399), one seminar course (410-419), and two proseminars (299, taken at least twice, one credit earned each time). Honors in Philosophy will be offered to students with a 3.0 grade-point average in the field. The award of a degree with honors rests on a thesis satisfactory to the department, to be written in PI 420: Directed Honors Thesis.





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## Philosophy Courses

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### PI 101 • 3 credits

#### Problems of Philosophy

This is an introduction to philosophy as the persistent and methodical attempt to think clearly about universal problems of human life, such as ways of knowing and studies in value. Every semester.

### PI 102 • 3 credits

#### Philosophical Aspects of Feminism

An introduction to philosophical reasoning, analysis of arguments and developing of critical skills, through a consideration of various topics relevant to feminism. Topics may include: presuppositions about woman's nature, abortion, sex equality, affirmative action. Every year.

### PI 207 • 3 credits

#### Introduction to Philosophy Through Aesthetics

This course is offered as an introduction to philosophy. Paintings, photographs, poems, novels, and music will be examined in order to discover the styles of individual commitment through which people have tried to bring meaning into their lives. While attempting to grasp the aesthetic significance of each work of art, we will continually push toward an understanding of the philosophical dimension of human life as expressed in each work. Every semester.

### PI 210 • 3 credits

#### Socrates

The course will be concerned with two sorts of problems. The first (the so-called 'Socratic Problem') is the problem of evaluating the evidence which we possess about Socrates. This will proceed by reading an analysis of Aristophanes' Clouds. Xenophon's Memorabilia and Apology, some passages from Aristotle and the following 'early' dialogues of

Plato: Apology, Crito, Euthyphro, the Charmides, Laches and Protagoras. The second problem to be dealt with is the extraction and evaluation of the main tenets of Socrates' philosophy, such as the claims that virtue is knowledge and that no one ever does wrong willingly. Every year.

### PI 211 • 3 credits

#### Logic

For this course logic is broadly conceived as a study of the weight of evidence in all fields. The foundation of valid thinking is established through class and propositional logic. The nature of meaning and of truth, and scientific method are topics of importance. Exercises in the recognition of fallacies are included. Every semester.

### PI 215 • 3 credits

#### Ethics I

A critical examination of normative theories of obligation and value. Every semester.

### PI 221 • 3 credits

#### History of Western Philosophy: Ancient

A study of philosophy from its origins with the pre-Socratics to the middle ages. The major portion of the course will be devoted to the philosophies of Plato and Aristotle. Every semester.

### PI 222 • 3 credits

#### History of Western Philosophy: Modern

A study of the major philosophical movements (rationalism, empiricism and critical philosophy) in the 17th and 18th centuries. There will be readings from the works of the major philosophers from Descartes through Kant. Every semester.

### PI 223 • 3 credits

#### History of Western Philosophy: Medieval

A study of the philosophical views developed from the 4th to the 14th centuries. Major emphasis will be on the views of Augustine, Aquinas, Scotus and Ockham. Every other year.

### PI 224 • 3 credits

#### Nineteenth Century Philosophic Thought

Writings selected from a century of great philosophical vitality and versatility. The culminating achievements of the western philosophical tradition and the first powerful stirrings of major contemporary trends are fed by such currents as evolutionism, empiricism, idealism, positivism, existentialism, and dialectical materialism. Philosophers studied include Hegel, Fichte, Bradley, Schopenhauer, Comte, Mill, Spencer, Marx, Kierkegaard, and Nietzsche. Every other year.

### PI 226 • 3 credits

#### Marx

Designed as an introduction to the work of Karl Marx for those students who do not necessarily have philosophical backgrounds. The thought of Marx will be presented in two parts. At first, the more philosophical thought of the young Marx will be examined in its relation to Hegel and his followers up to Marx's "settling of accounts" with German philosophy. The second part will deal with the more scientific phase of Marx's thought expressed in *Capital* V.I. Marx's own works will form the reading in the course. Every other year.

### PI 227 • 3 credits

#### Nietzsche

Focus on a critical analysis of the major philosophical themes

in Nietzsche's thought. Emphasis is placed on Nietzsche's theory of truth, epistemology and metaphysics. Nietzsche's roots in the classical tradition are also examined. Readings include most of Nietzsche's major works as well as secondary criticism. Every other year.

**PI 230 • 3 credits**  
**History of Science I**

The development of science from prehistoric times through the time of Newton. Theories of the solar system will be included. No previous knowledge of astronomy required, but simple observations of celestial phenomena requested. Every year.

**PI 229 • 1 credit**  
**Proseminar**

Emphasis is placed on helping students to acquire and practice philosophical and research techniques as a basis for further work. Students may also apply what they have already learned to exploring contemporary areas of philosophic interest. Must be taken by all philosophy majors twice. May be taken Pass/Fail. Every year.

**PI 301 • 3 credits**  
**Theory of Knowledge**

This course presents historically important analyses of knowledge as a basis for forming a justifiable view of its scope and structure, and an understanding of its relation to other human activities. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 303 • 3 credits**  
**Metaphysics**

A study of some representative philosophical views on the general structure and ultimate explanation of reality. Some topics

considered will be causality, chance and necessity, the problem of first cause. Consideration will also be given to some objections to metaphysics as a philosophical undertaking. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 311 • 3 credits**  
**Philosophy of Language**

This course studies historical views of language in order to understand contemporary analyses of it. The current resurgence of language as a dominant theme of our time parallels previous epochal themes of reason, of salvation, and of science. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 315 • 3 credits**  
**Ethics II**

Concentrates on the meaning of ethical terms, the objectivity of moral judgments and the justification of these moral judgments. The Is-Ought Question is studied at some length, as well as the possibility of an ontology of morals proposed by contemporary metaphysicians. Every other year.  
Prerequisite: PI 215

**PI 316 • 3 credits**  
**Political Philosophy**

A study of some of the major themes and problems traditionally considered by political philosophers. A consideration of what constitutes a political problem and a discussion of the role of philosophy with regard to such problems. The course thus combines an analytical and an historical approach in the effort to relate traditional political thought to contemporary problems. Every other year.

Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 318 • 3 credits**  
**Bioethics**

A study of the ethical issues related to death and dying, behavior control, genetic counseling and genetic engineering, and population limitation. It will study the work of specific research projects and institutes on those issues. Every other year.  
Prerequisite: PI 215 or its equivalent or consent of instructor.

**PI 320 • 3 credits**  
**Philosophy of Science**

This course is a critical analysis of science and its methods; a study of the justification and the range of scientific knowledge  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor, or third year major in Mathematics or the sciences.

**PI 322 • 3 credits**  
**History of Science II**

Selected topics in the history of such fields as physics, biology, chemistry or social science. Every third year.  
Prerequisite: PI 230

**PI 323 • 3 credits**  
**Philosophy of Art**

Continues on a more advanced level the development of a theory of art already begun in the Introduction to Philosophy via Aesthetics. Themes to be discussed include the nature of form and expression in art, the non-discussive character of art, the similarities and differences between the artist's relation to the work of art and the spectators', the relation between art and subjectivity, the difference between the linguistic and visual arts, the social function of art, and many

more. The works of a few major philosophers will be compared to give students alternative points of view. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 324 • 3 credits**  
**Philosophy of History**

This course will consider various theories that have been proposed for interpreting history, as well as recurrent problems about the structure of historical explanation, the possibility of objectivity in history, and the relationship between history and the social sciences. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor

**PI 325 • 3 credits**  
**Philosophy of Religion**

Analytical and constructive study of central concepts and essential manifestations of religion. Both historical and contemporary readings are required. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 326 • 3 credits**  
**Philosophy of Law**

Specific problems about freedom, justice, responsibility and punishment will be considered, as well as problems of legal reasoning, analytical problems of definition and issues of the inter-relation of law and morality. Intellectually and practically important especially for students who are considering law school or politics. Every other year.  
Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor

**PI 329 • 3 credits****Phenomenology of Death**

An examination of the various philosophical views held by the subject of death, such as the philosophy of death, the meaning of death, how death is to be known, the ethical and religious issues as well as the philosophical, theological and social aspects of death. As needed.

Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 332 • 3 credits****Philosophical Anthropology**

The subject of the inquiry is a common thread by the two related questions: "What is human nature?" and "What is our place in the nature of things?" A few major philosophers will be selected and studied in depth with reference to the answers to these questions. Every other year. Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 341 • 3 credits****Structuralism**

This course will deal with recent European philosophical thought and will center primarily on a few of the French representatives of the 1940's and 1960's. Special emphasis will be given to the problem of the philosophical grounding of structuralist thought and to the possibility of reconciling it with the phenomenological/existential philosophies of consciousness. The course will begin by developing the thought of Maurice Merleau-Ponty and the influence of structuralist linguistics on him. Later, it will examine structuralist approaches in various human sciences. Major figures studied will include: Merleau-Ponty, Ferdinand de Saussure, Levi-Strauss, Foucault, Barthes, and Althusser.

Every other year.

Prerequisite: Semester Course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 350 • 3 credits****Plato**

The course will be concerned with an examination of the major themes in Plato's philosophy. Reading will be taken from dialogues of all three periods, but emphasis will be placed upon the "middle dialogues."

Every other year.

Prerequisite: PI 221 or consent of instructor.

**PI 361 • 3 credits****Contemporary Continental Philosophy**

A study of the various currents of continental European thought in the 20th century with special concentration upon the forerunners and representatives of phenomenology and existentialism: Kierkegaard, Nietzsche, Husserl, Jaspers, Heidegger, Merleau-Ponty and Sartre, among others, will be read. Every other year.

Prerequisite: Semester course in Philosophy, exclusive of Logic or consent of instructor.

**PI 371 • 3 credits****Contemporary British Philosophy**

This course concentrates on the dominant British theme of philosophy as analysis of statements about ourselves and the world. It will include Moore, Russell, Ryle, Wisdom, Austin, Strawson, and Wittgenstein.

Every third year.

Prerequisite: Semester course in Philosophy, exclusive of Logic or consent of instructor.

**PI 382 • 3 credits****Contemporary American Philosophy**

The major positions since the late

19th century (pragmatism, idealism, naturalism and process philosophy) will be studied through selected texts from Peirce, James, Royce, Dewey, Santayana and Whitehead.

Every third year.

Prerequisite: Semester course in Philosophy, exclusive of Logic, or consent of instructor.

**PI 391 • 3 credits****Symbolic Logic**

A study of formal mathematical logic. As needed.

Prerequisite: PI 211.

**PI 410-419 • 3 credits****Seminar**

These courses provide an opportunity for intensive study of (1) major philosophers, such as Plato, Aristotle, Kant, Santayana, Whitehead, Wittgenstein, or (2) of philosophers related by a common theme in development, such as Aquinas, Scotus, Ockham, or Locke, Berkeley, Hume, or Descartes, Spinoza, Leibniz, or (3) of current philosophical work.

Prerequisite: Major in Philosophy and/or consent of instructor.

**PI 420 • 3 credits****Directed Honors Thesis**

This course provides departmental guidance for a thesis developing out of the primary and continuing interest of the student.

Prerequisite: Major in Philosophy and 3.0 average in philosophy courses.

**PI 495 • 3 credits****Independent Study**

Prerequisite: Philosophy major.



# Physics

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## Faculty and Fields of Interest

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**Zvi Bar-Yam** • elementary particles

**Robert Bento** • science and society, solar energy

**James de Pagter** (chairperson) • elementary particles

**John Dowd** • elementary particles

**Kazi Haq** • solid state and thin film physics

**Milton Hoenig** • nuclear theory and structure

**Wolfhard Kern** • elementary particles

**George Leung** • particle physics and astrophysics

**Donald Presel** • physics education

**John Russell** • elementary particles

**Joseph P. Sauro** • solid state physics, x-ray diffraction

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## Physics Major

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A physics major at SMU is a candidate for the Bachelor of Science Degree. The requirements during the first two years include the basic courses in mathematics and physics. Throughout this period students should consult frequently with their departmental advisors and familiarize themselves with department activities such as the meetings and special lectures of the Physics Club.

At the beginning of the junior year the students aided by their advisors should plan a course of study for the completion of the college program. The advanced courses selected during the third and fourth years should be consistent with the students' interests and goals. These interests may be in physics or in allied fields such as astronomy, environmental science, biophysics, meteorology and oceanography. Career plans of the physics major may include graduate study, work in an industrial or government laboratory, teaching in a secondary school, or entering the fields of business, law or medicine.

Students may arrange for supervised independent study as well as for work on individual research projects, and there are frequent opportunities for student participation in faculty research.



## Requirements

Of the 120 credits needed for a Bachelor of Science degree in Physics, the Department requirement is 39 credits in Physics, 8 credits in a Second Science, and 2 years of basic Mathematics and Computer Science.

First Year			Semester Credits: First		Second
PH	141	Contemporary Physics		3	
PH	142	Mechanics and Motion			4
MA	131*	Introduction to Mathematics		3	
MA	111 112	Analytic Geometry and Calculus I, II		4	4
MA	132	Computer Programming			3
	or CS 261**				
E	101 102	Freshman English		3	3
		Humanities or Social Sciences		3	3
				16	17

\*MA 131 may be waived with permission of the Department.

\*\*MA 132 or CS 261 not required, but knowledge of elementary computer programming must be shown.

Second Year			Semester Credits: First		Second
PH	211	Physics III: Electricity and Magnetism		3	
PH	221	Laboratory III: Electronics		1	
MA	211	Analytic Geometry and Calculus III		4	
PH	232	Radiation and Waves			3
PH	242	Radiation and Waves Lab.			1
MA	212	Differential Equations I			3

Second Science Requirement: A total of 8 credits to be selected from approved courses in Biology, Chemistry and Engineering. It is recommended that these courses be taken in the second and third years.

Third and Fourth Years			Semester Credits: First		Second
PH	341 342	Modern Physics and Quantum Mechanics I, II		3	3

Upper Division Laboratory: A total of 6 credits to be selected from the laboratory courses PH 321, PH 322, PH 421 and PH 422.

Second Science Courses: A total of 8 credits must be selected from Biology, Chemistry or Engineering courses. These selections must be approved by the departmental advisor.

Physics Electives: A minimum of 39 credits in Physics are required

PH	171 172	Planet Earth and Its Resources I, II
PH	251 252	Elementary Astrophysics I, II
PH	300	Undergraduate Seminar
PH	313 314	Mechanics and Wave Motion I, II
PH	321 322	Electronic Devices and Circuits
PH	343 344	Mathematical Physics I
PH	351 352	Physics of the Environment
PH	361	Introduction to Geophysics
PH	411 412	Electric and Magnetic Fields II
PH	421 422	Advanced Physics Laboratory I, II
PH	441	Statistical Thermodynamics
PH	470	Independent Study
PH	480	Undergraduate Research
PH	490	Senior Thesis
PH	531 532	Quantum Mechanics I, II
PH	541 542	Solid State Physics I, II

Courses Numbered above 500 are graduate courses and may be elected by a student only with the consent of the instructor

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**Graduate Program**

The department offers a program of studies leading to the M.S. degree in Physics; for details of the graduate program, consult the Bulletin of the Graduate School





## Physics Courses

### PH 101 • 3 credits

#### Introduction to Physics I

An introductory course in physics covering mechanics, heat and thermodynamics. Emphasis is on fundamentals and their application to practical problems. Non-calculus presentation. MA 101 is recommended as a prerequisite or corequisite.

### PH 102 • 3 credits

#### Introduction to Physics II

Continuation of PH 101. The topics covered include vibrations, sound, optics, electricity and magnetism. Non-calculus presentation. MA 102 recommended.

### PH 103 • 1 credit

#### General Physics Laboratory I

A laboratory course that accompanies PH 101 or PH 107. An introduction to experimental techniques. Experiments in mechanics. Two hours weekly.

### PH 104 • 1 credit

#### General Physics Laboratory II

A laboratory course that accompanies PH 102 and PH 108. Experiments in optics, electricity and modern physics using electrical measurement techniques. Two hours weekly.

### PH 107 • 3 credits

#### Basic Physics I

An introductory course in physics covering mechanics, heat and optics. Emphasis is on principles, applications and the development of problem solving ability. Elementary calculus is used and a course in calculus is a corequisite. Two hours lecture and one hour recitation.

### PH 108 • 3 credits

#### Basic Physics II

Continuation of PH 107. The study of sound, electricity and magnetism, and atomic and nu-

clear physics. Two hours lecture and one hour recitation.

Prerequisite: PH 107

### PH 111 • 3 credits

#### Physics I: Mechanics

Elementary mechanics including the principles of conservation of energy and momentum. Part of a four semester calculus-based sequence in the elements of physics. PH 121 to be taken concurrently. Two hours lecture and two hours recitation.

### PH 112 • 3 credits

#### Physics II: Waves & Optics

Continuation of PH 111. Wave motion, heat and optics. PH 122 to be taken concurrently. Part of a four semester calculus-based sequence in the elements of physics. Two hours lecture and two hours recitation.

### PH 121 • 1 credit

#### Laboratory I: Mechanics

A laboratory course that accompanies PH 111. A set of experiments illustrating the principles of mechanics for point particles. Newton's second law, the conservation of energy and momentum.

3 hours biweekly

### PH 122 • 1 credit

#### Laboratory II: Waves & Optics

A laboratory course that accompanies PH 112. Experiments on oscillatory motion, sound and optics using springs, ropes, lasers, water and air.

3 hours biweekly

### PH 141 • 3 credits

#### Contemporary Physics

An introductory course in Physics designed to give the student an overview of the field and an introduction to some specific problems of current interest to physicists. 3 hours lecture and demonstration.

### PH 142 • 4 credits

#### Matter and Motion

A combined lecture-laboratory course in elementary mechanics. The laws of conservation of Energy, Momentum, and Angular Momentum are introduced while skills are developed in the appreciation of mathematics — including calculus — to the solution of physical problems. 5 hours/week.

### PH 161 • 3 credits

#### Science, Technology, and Society I

Interaction of science and technology with the individual and contemporary society. Non-mathematical presentation and in-depth study, during each term, of a major development in science, considered in its historical and social context. Currently the topic is the nucleus — the development of the concept, its applications in meeting present and future energy needs as well as its abuse in weapons. Prerequisite: None

### PH 162 • 3 credits

#### Science, Technology, and Society II

A continuation of PH 161. Discussion of a second major scientific development. The topic, Evolution of the Universe and Man. Lectures on astrology and genetics are presented by guest lecturers. Prerequisite: None

### PH 171 • 3 credits

#### Planet Earth and Its Resources I

Origin and history of earth, composition and structure of its interior, crust, oceans, and atmosphere. Plate tectonics, and sea floor spreading, seismology, vulcanism and earthquakes, magnetism of earth. Forces shaping earth's surface, faults and folds, erosion, sedimentation

and weathering. Earth materials: soil minerals and ores, igneous, sedimentary, and metamorphic materials. Earth resources: salts and fertilizers, chemical supplies, and building materials. Prerequisites: None

**PH 172 • 3 credits**  
**Planet Earth and Its Resources II**

Continuation of PH 171. Earth resources: rare and abundant metals and their uses, history of life on earth, the fossil record. Energy and fossil fuels. Nuclear energy sources, Uranium, Plutonium, and Deuterium. Water and its distribution, rate of use, and pollution. Atmospheric-oceanic circulation and heat balance. Weather and climate. Man as agent of change on Planet Earth. Outlook on Future. Prerequisite: PH 171 or permission of instructor.

**PH 211 • 3 credits**  
**Physics III: Electricity & Magnetism**

Fundamental laws of electricity and magnetism. Electric and magnetic properties of materials. Maxwell's equations. Part of a four semester calculus-based sequence in the elements of physics. PH 221 to be taken concurrently. Four hours lecture and recitation

**PH 212 • 3 credits**  
**Physics IV: Modern Physics**  
Continuation of PH 211. Introduction to modern physics: relativity, atomic, and nuclear physics. Part of a four semester calculus-based sequence in the elements of physics. PH 222 to be taken concurrently. Four hours lecture and recitation.

**PH 221 • 1 credit**  
**Laboratory III: Electronics**  
A laboratory course that accompanies PH 211. Experimental

studies of the dynamics of electron motion, resonant circuits, and solid state devices. Three hours biweekly.

**PH 222 • 1 credit**  
**Laboratory IV: Modern Physics**  
A laboratory course that accompanies PH 212. Experiments in modern physics including radioactive decay, photoelectric effect, atomic excitation, and atomic spectra. Three hours biweekly

**PH 232 • 3 credits**  
**Radiation and Waves**  
Oscillations of mechanical and electrical systems; electromagnetic waves and optics; mechanical waves; properties of electromagnetic radiation. Prerequisite: PH 211

**PH 242 • 1 credit**  
**Radiation and Waves Laboratory**  
A laboratory course that accompanies PH 232. Experiments on oscillations and waves in mechanics, electricity, acoustics and optics. Three hours biweekly. Prerequisite: PH 211

**PH 251 • 3 credits**  
**Elementary Astrophysics I**  
This course explores basic concepts and modern developments in astrophysics at a level suitable for all undergraduate students. It can be used to fulfill the science requirement. Topics related to the nature of light, the structure and evolution of stars and galaxies will be studied. Special emphasis will be placed on recent discoveries and new techniques that have changed our conceptions and understanding of the universe. Prerequisite: None

**PH 252 • 3 credits**  
**Elementary Astrophysics II**  
This course is a continuation of PH 251. It expands on the topics previously discussed and includes a more detailed study of the solar system, the stars and galaxies. The concepts of cosmology are introduced. Physical principles needed to understand these topics will be gradually introduced. Prerequisite: PH 251 or permission of instructor.

**PH 300 • 3 credits**  
**Undergraduate Seminar**  
A seminar, conducted at the sophomore-junior level, devoted to the discussion of topics in Modern Physics, Astrophysics and related topics

**PH 313 • 3 credits**  
**Mechanics and Wave Motion I**  
Mechanics of particle systems including central force motion and two body scattering; accelerating coordinate systems; rigid body kinematics and dynamics; coupled oscillators, small vibrations and normal modes; introduction to Lagrangian and Hamiltonian methods. Three hours. Prerequisite: PH 232, MA 212

**PH 314 • 3 credits**  
**Mechanics and Wave Motion II**  
Wave phenomena in mechanics, optics and acoustics. A study of the wave equation and its applications with emphasis on the general properties of waves. Interference, diffraction, reflection, refraction and polarization. Three hours. Prerequisite: PH 313

**PH 321 • 3 credits**  
**Electronic Devices and Circuits I**  
A lecture and laboratory course in electronic circuit theory covering both active and passive de-

vices and elementary networks. Two hours lecture, three hours laboratory. Prerequisite: PH 211, MA 212.

**PH 322 • 3 credits**  
**Electronic Devices and Circuits II**  
A continuation of PH 321 with emphasis on applications using the elements, devices and techniques of modern research. Amplifiers, coincidence and scaling circuits, detectors, analog devices, digital and integrated circuits. Two hours lecture, three hours laboratory. Prerequisite: PH 321

**PH 341 • 3 credits**  
**Modern Physics and Quantum Mechanics I**  
Experimental evidence leading to the development of modern physics. Bohr-Sommerfeld theory of the hydrogen atom. Special Relativity. Introduction to the Schrodinger equation with solutions to simple problems leading to the study of one electron atom. Electron spin and magnetic moment and fine structure in hydrogen. Three hours. Prerequisite: PH 232

**PH 342 • 3 credits**  
**Modern Physics and Quantum Mechanics II**  
Continuation of PH 341. Further applications of the principles of quantum mechanics with applications to many particle systems. Quantum statistics, atomic spectra of many electron atoms, nuclear structure, nuclear models and scattering. Three hours. Prerequisite: PH 341

**PH 343 • 3 credits**  
**Mathematical Physics I**  
Development of mathematical tools useful in physics. Vector

calculus, linear algebra, matrices, operators, orthogonal functions  
Three hours  
Prerequisite: PH 232, MA 212

**PH 344 • 3 credits**  
**Mathematical Physics II**  
Continuation of PH 343. Complex variables, partial differential equations, boundary value problems, special functions, numerical methods  
Three hours  
Prerequisite: PH 343

**PH 351 • 3 credits**  
**Physics of the Environment I**  
A lecture-seminar course applying physical concepts to environmental problems. Principles of energy conservation, transformations between different forms of energy, energy cycles in biosphere and geosphere. Solar radiation and earth's radiation balance, absorption, emission, and reflection. Study of populations and their distributions, exponential growth, reproduction rate and demographic trends. Utilization of scarce resources: metal ore, minerals, gas, oil, and coal. Nuclear, geothermal and hydroelectric power.  
Prerequisite: A one year course in physics or permission of instructor

**PH 352 • 3 credits**  
**Physics of the Environment II**  
Continuation of PH 351. Future energy resources: solar energy, nuclear fission and breeder reactors, fusion power. Environmental effects of power generation, the major atmospheric and radioactive pollution and their biological and health aspects. Circulation systems in air and ocean. Air pollution, smog and particulates, oxides of sulfur, carbon and nitrogen. Water pollution by oil and industrial

wastes. Noise pollution, sonic booms and the SST.  
Prerequisite: PH 351 or permission of instructor

**PH 361 • 3 credits**  
**Introduction to Geophysics**  
A one semester course for science and engineering students dealing with the applications of geophysics. Topics covered will include the origin of the earth, geochronology, temperature of the earth, seismic wave propagation, theory of gravitational and magnetic potentials, and geomagnetism.  
Prerequisite: A one year course in physics or its equivalent.

**PH 411 • 3 credits**  
**Electric and Magnetic Fields I**  
Study of the fields of static charges and constant currents, the properties of dielectric and magnetic materials, and magnetic induction, leading to the formulation of Maxwell's equations.  
Three hours  
Prerequisite: PH 232, MA 212.

**PH 412 • 3 credits**  
**Electric and Magnetic Fields II**  
Continuation of PH 411. Development of the wave equation. Electromagnetic waves in space and in matter. Study of radiation from time varying charge and current distributions.  
Three hours  
Prerequisite: PH 411

**PH 421 • 3 credits**  
**Advanced Physics Laboratory I**  
A laboratory course designed to acquaint the student with current experimental techniques in physics and methods of data analysis.  
Four hours laboratory  
Prerequisite: PH 232

**PH 422 • 3 credits**  
**Advanced Physics Laboratory II**  
A continuation of PH 421. Projects in experimental physics with emphasis on independent work by the student.  
Four hours laboratory.  
Prerequisite: PH 232

**PH 441 • 3 credits**  
**Statistical Thermodynamics**  
The laws of thermodynamics and their interpretation based on the microscopic behavior of matter. Entropy and probability, equilibrium, reversibility, thermodynamic functions, phase changes, quantum statistics. Applications to problems in solid state physics.

**PH 470 • 3 credits**  
**Independent Study**  
Individual study of selected topics in physics under the guidance of a faculty advisor. This course is suitable for study of physics subfields of special interest to individual students and faculty members.  
Prerequisite: Permission of department.

**PH 480 • 3 credits**  
**Undergraduate Research**  
Individual work under the supervision of faculty member on an experimental, theoretical, or literature review project in physics. This work may lead to a senior thesis project or may be concluded by a written report at the end of the term.  
Prerequisite: Permission of department.

**PH 490 • 3 credits**  
**Senior Thesis**  
Intensive individual work on an experimental or theoretical problem in physics under the guidance of a staff member. The special project is to be se-



lected at the beginning of the senior year. Credit will be assigned in the second semester.

**PH 511 • 3 credits**  
**Advanced Mathematical Physics I**

Mathematical methods in physics. Linear algebra, complex variable theory, eigenfunction expansions and orthogonal functions, the special functions of mathematical physics.

**PH 512 • 3 credits**  
**Advanced Mathematical Physics II**

Partial differential equations, integral equations, and Green's functions. Generalized functions. Calculus of variations. Group theory.

**PH 521 • 3 credits**  
**Theoretical Mechanics and Relativity**

The Lagrangian and Hamiltonian formulation of Newtonian mechanics. Variational principles, transformation theory. Poisson brackets, and Hamilton-Jacobi theory. Special relativity and the covariant formulation of particle mechanics. Introduction to general relativity.

**PH 522 • 3 credits**  
**Electromagnetic Theory**  
Boundary value problems in electrostatics, Green's functions and eigenfunction expansions. Maxwell's equations, momentum and energy of the electromagnetic field, radiation, multipole expansions, scattering. Special relativity and Lagrangian formulation, radiation from moving charge, radiation reaction.

**PH 531 • 3 credits**  
**Quantum Mechanics I**  
A course in the fundamentals of quantum mechanics. Schrodinger equation, operator tech-

niques, angular momentum, central force motion, spin, matrix representations, and the theory of measurement.

**PH 532 • 3 credits**  
**Quantum Mechanics II**  
Radiative processes. The theory of scattering. Variational principles. Symmetry and invariance principles. Second quantization. Introduction to relativistic quantum mechanics and field theory.

**PH 541 • 3 credits**  
**Solid State Physics I**  
Basic concepts of solid state physics. Crystal structures, lattice vibrations, ionic crystals. Dielectric and optical properties of insulators, ferroelectrics, free electron theory of metals, energy bands, semi conductors.

**PH 542 • 3 credits**  
**Solid State Physics II**  
Theory of conductivity and related effects. Rectification and Transistors. Imperfection in crystals. Plastic deformation color centers, optical properties of solids. Theory of magnetism.

**PH 551 • 3 credits**  
**Nuclear Physics**  
A discussion of topics in nuclear physics including nuclear forces, nuclear models, nuclear reactions and nuclear decay.

**PH 552 • 3 credits**  
**Elementary Particle Physics**  
Relativistic kinematics of particle motion, phenomenological and dynamical theories of particle interactions and classification of particles according to symmetry principles.

**PH 561 • 3 credits**  
**Physics of the Environment I**  
A lecture-seminar course with significant graduate student participation in seminar prepara-

tion. Principles of energy conservation; transformations between different forms of energy; energy cycles in biosphere and geosphere. Solar radiation and earth's radiation balance, absorption, emission, and reflection. Study of populations and their distributions, exponential growth, reproduction rate and demographic trends. Utilization of scarce resources: metal ores, minerals, gas, oil and coal. Nuclear, geothermal and hydro-electric power.

**PH 562 • 3 credits**  
**Physics of the Environment II**  
Continuation of PH 561. Future energy resources: solar energy nuclear fission and breeder reactors, fusion power. Environmental effects of power generation: thermal, atmospheric, and radioactive pollution and their biological and health aspects. Circulation systems in air and ocean. Air pollution, smog and particulates, oxides of sulfur, carbon and nitrogen. Water pollution by oil and industrial wastes. Noise pollution, sonic booms and the SST.

**PH 565 • 3 credits**  
**Geophysics**  
A course for graduate students in the basic principles of geophysics. Propagation of elastic waves and their application to seismology, consideration of the earth's gravity, geomagnetism, thermal properties and radioactivity.

**PH 570 • 3 credits**  
**Independent Study**  
Individual study under the supervision of a faculty member in an area of physics that is not otherwise part of the graduate course offering. Primarily for graduate students.

**PH 575 • 3 credits**  
**Graduate Seminar**  
A seminar devoted to the discussion of topics in modern physics and related subjects. Primarily for graduate students.

**PH 580 • 3 credits**  
**Graduate Research**  
Directed research on a project in experimental, theoretical, or applied physics under the supervision of a faculty sponsor. The research may lead to a graduate thesis project or may be concluded by a written report at the end of one or two terms.

**PH 590 • Not to exceed 6 credits**  
**Graduate Thesis**  
Thesis research on an experimental or theoretical project in physics under a thesis advisor. Project will usually be selected at the beginning of the second year of graduate study. Submission of a formal thesis required at conclusion.

# Political Science

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## Faculty and Fields of Interest

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**Shaukat Ali** • public administration, comparative politics, South Asia, non-western political thought

**Naseer Aruri** • international relations, foreign policy, comparative politics, Middle East, revolutionary change

**Charles Brockett** • American politics, Congress, Presidency, comparative politics, Latin America

**Jean Doyle** • comparative politics, China, women in politics, Communist systems of less developed societies

**Richard M. Fontera** • comparative politics, politics of social change, politics of South Asia

**Jack W. Fyock** • American poli-

tics, state and local, urban politics

**Hazel McFerson** • comparative politics, Africa, politics in Black America

**Philip H. Melanson** (chairperson) • American politics, public policy, empirical theory

**T. Noel Stern** • western political thought, American political thought, comparative politics; Europe

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## Political Science Major

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Students who major in political science may go directly into professional work, continue graduate study in political science, enter law school or enter a professional school in social work, penology and urban planning.

Graduates who hold the Bachelor of Arts degree in political science are qualified for positions in journalism, secondary school teaching, pressure group and reform organizations, and government service of the junior and middle management level.

A major in political science can lead to challenging and responsible careers in several areas: college teaching, diplomatic service, service in international organizations, managerial and policy positions in local, state and federal administrations. A student may also enroll in a dual major program (political science and education) leading toward a bachelors degree and certification for teaching political science in secondary school.






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### Requirements

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Majors in political science are required to take a minimum of 30 credits in the major. The requirements of the College of Arts and Sciences must also be met.

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PS 101	American Government	3
PS 102	Comparative Government	3
PS 221	Scope & Methods of Political Science	3
	Electives in Political Science	21

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Students who plan to attend graduate or professional school are advised to take at least one research seminar.



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## Political Science Courses

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### **PS 101 • 3 credits**

#### **American Government**

Theory and practice of national policy making in Congress, the Presidency, and the Supreme Court, and the interaction of these institutions with interest groups, political parties, public opinion and the mass media

### **PS 102 • 3 credits**

#### **Comparative Government**

Study of political processes, ideologies, constitutional systems and governmental structure of foreign countries including Great Britain, France, Germany, Soviet Union and selected Third World nations. Comparison with American system of government. Stress laid on the use of analytical method

### **PS 201 • 3 credits**

#### **International Relations**

An examination of the nation-state system. Attention is given to conceptions such as the national interest, balance of power, the forms and distribution of power by which states seek to implement national interest and some contemporary crisis situations

### **PS 221 • 3 credits**

#### **Scope and Methods of Political Science**

A survey of the concepts and methods of contemporary political science with special attention to the impact of behavioralism

### **PS 300 • 3 credits**

#### **State Government**

An exploration of politics and government in the American states. The course is structured by a comparative analysis of politics in the 50 states but the central concern is Massachusetts politics and government. Special attention is given to the relationship between political patterns and such governmental

services as education, welfare, and urban reconstruction

### **PS 301 • 3 credits**

#### **American Political Thought**

Development of American political thought from Colonial period to present day. Among points of stress: Jefferson, Federalist Papers, Calhoun, Thoreau, Sumner, Veblen, selected Supreme Court decisions. Effect of newer scientific thinking in sociology, psychology, and management on American political thought. Prerequisite: Upper class standing

### **PS 302 • 3 credits**

#### **Modern Political Thought**

Complements PS 301, stressing contribution of European and other foreign thinkers. Development of democratic thought since 18th century, capitalism, socialism, communism, fascism, anarchism and religiously oriented thinkers. Influence of literary writers, scientific thinkers. Prerequisite: Upper class standing

### **PS 303 • 3 credits**

#### **Political Parties and Pressure Groups**

An analysis of the role played by these organizations in the American political system. Major concerns are the social and psychological factors which influence party affiliation and voting, and an evaluation of the contribution of these groups to democracy in the United States. Prerequisite: Upper class standing

### **PS 304 • 3 credits**

#### **Congress and the Presidency**

This course examines two of the major institutions of United States politics. Each will be studied with reference to their

nature in original intent, current reality (both descriptive and conceptual), and future probability. The course will also focus on the interactions of the two and particularly the problems generated by these relations. Prerequisite: Upper class standing

### **PS 305 • 3 credits**

#### **Comparative Politics: Far East**

The course will deal with the domestic political processes in China, Japan, and Korea, including structures, modes of participation, leadership, political culture, ideology, policy making, and policy implementation. There will be particular comparative emphasis on historical and socio-economic factors which have influenced the development of these nations, such as their responses to contact with the West in the 19th Century. The course will also be problem oriented and stress the potential for future change and development in these countries. Prerequisite: Upper class standing

### **PS 309 • 3 credits**

#### **Congress and Congressional Behavior**

This course examines Congressional behavior on both the institutional and individual levels. Special attention is paid to congressional-executive relations, Congress as a policy-making institution, and recent attempts at reform.

### **PS 311 • 3 credits**

#### **Urban Politics**

A critical examination of the urban political community in the United States. Particular attention is given to the adequacy of the city as an arena of conflict resolution and decision-making as well as such current problems as urban reconstruction

tion schemes, metropolitan fragmentation and political alienation in the ghettos. Field research in the area by individuals or groups is encouraged but not required. Prerequisite: Upper class standing.

**PS 315 • 3 credits**  
**Public Policy in America**

An examination of important aspects of the American political system which shape the formation and implementation of public policies. Special attention is given to those political institutions, processes, and problems which bear upon contemporary issues of public policy at various levels of American government.

**PS 316 • 3 credits**  
**The Politics of Dictatorship**

Examination of types of dictatorships in terms of their objectives, behavior, dynamics, forms of control, consequences and possible weaknesses. Theoretical and case material on such types as military dictatorship, so-called "oriental" dictatorship, colonial rule, economic elitism, fascism, Nazism, and Stalinism and probable future directions. Prerequisite: PS 102 or permission of instructor. Junior and senior level.

**PS 318 • 3 credits**  
**Comparative Politics: Communist Systems**

Analysis of similarities and differences among Communist states — Cuba, China, the Soviet Union, and Eastern Europe. Emphasis will be on the internal dynamics of change and the effects of ideological and organizational factors on Communist bloc relations, especially the Sino-Soviet dispute. Prerequisite: PS 102 or consent of instructor. Upper class standing.

**PS 321 • 3 credits**  
**Public Administration**

Examination of the general nature of the bureaucracy in public and private organization and in various cultural contexts. Attention is given to administrative responsibility. Prerequisite: Upper class standing.

**PS 325 • 3 credits**  
**Comparative Politics: Latin America**

This course is an introduction to Latin American politics — both the political process itself and how it is conditioned by contextual factors. Attention is also paid to a comparison of the various strategies for change and the major obstacles they face. The course aims at not only conceptual understanding built on descriptive knowledge, but also an appreciation for Latin America in itself. Current interest is considered in the selection of countries for analysis (e.g., Argentina, Brazil, Chile, Cuba, and Mexico). Prerequisite: Upper class standing.

**PS 327 • 3 credits**  
**Comparative Public Administration**  
Comparative study and analysis of the public service system in selected countries in the U. S., Europe, and Asia. Topics include recruitment, selection, promotion, policy making role and social background of the higher civil servants.

**PS 331 • 3 credits**  
**Comparative Politics: Developing Nations**  
An examination of the major premises, concepts, and manifestation of modernization, and the concrete application of these concepts to specific modernizing societies in Africa, Asia and

Latin America. Prerequisite: Upper class standing.

**PS 332 • 3 credits**  
**Comparative Politics: Middle East**  
The politics of the Middle East and North Africa are analyzed in terms of the region's geography, its Islamic background, the impact of the West, and the specific demands and stresses of modernization. Prerequisite: Upper class standing.

**PS 333 • 3 credits**  
**Comparative Politics: Soviet Union**  
Political and ideological premises of the Russian Revolution, the Soviet society and the Communist Party under Lenin, Stalin, and their successors; de-Stalinization and Communism as a world movement today. Prerequisite: Upper class standing.

**PS 334 • 3 credits**  
**Comparative Politics: Africa**  
Study of government and administration, political parties and ideologies in Africa south of the Sahara. Attention given to ecological factors including cultural heritage and geography. Prerequisite: Upper class standing.

**PS 335 • 3 credits**  
**Africa in World Politics**  
International relations of the newly independent African states. Special attention to impact of political and economic problems on the foreign policy of African nations south of the Sahara. Relationship of African states to the United Nations and other international organizations, and with major world powers. Prerequisite: Upper class standing.

**PS 336 • 3 credits**  
**Revolutionary Change**  
Revolution is treated as a special category of social change. The course deals with a comparative analysis of the determinants of revolutionary change in selected areas in Latin America, Africa, the Middle East, and Southeast Asia. Prerequisite: Upper class standing.

**PS 339 • 3 credits**  
**Comparative Politics: South Asia**  
The course is a study of certain important systems in South Asia and Southeast Asia. The countries included are India, Pakistan, Malaysia, and Philippines. Topics included for discussion are constitutional framework, political process, and salient characteristics of the political culture as a whole.

**PS 340 • 3 credits**  
**The Presidency**  
The purpose of this course is to analyze the institution of the American presidency, with emphasis on recent presidents. We will be especially concerned with questions of presidential power, political and institutional constraints on the exercise of power, the nature of the modern presidential office, the role of executive actors in the policy-making process, and presidential leadership and personality.

**PS 343 • 3 credits**  
**American Foreign Policy**  
A study of the substance and formulation of American policies in world politics. Attention is given to the changing role of the United States in world politics, and the varying constitutional, administrative and political considerations which have

Effect of changes in American foreign policy since World War II.  
Prerequisite: Upper class standing.

**PS 351 • 3 credits**  
**American Constitutional Politics**

Covers the principles of the United States Constitution. Analyzes Supreme Court cases involving federalism, commerce clause, due process, civil rights, equal protection.  
Prerequisite: Upper class standing.

**PS 354 • 3 credits**  
**Civil Liberties**

A study of civil liberties in American theory and practice. Topics include free speech, religious state relations, fair trial, unwarranted search and seizure, and the criminal justice system. Taught as a discussion course.  
Prerequisite: Upper class standing.

**PS 361 • 3 credits**  
**Issues and Politics**

A study of contemporary public affairs given by a professor experienced in his political process under the University Distinguished Leadership Program and Program.  
Prerequisite: Committee Department.

**PS 371 • 3 credits**  
**History of Non-Western Political Thought**

A course which comprehends the political philosophy of non-western thinkers whose ideas have had a deep impact on the political thought of the modern world. Includes Confucius, Mencius, Buddha, Hindu and Muslim thinkers who shaped the political thought of their respective cultures.  
Prerequisite: Upper class standing.

**PS 380-398 • 3 credits**  
**Research Seminars on Selected Topics**

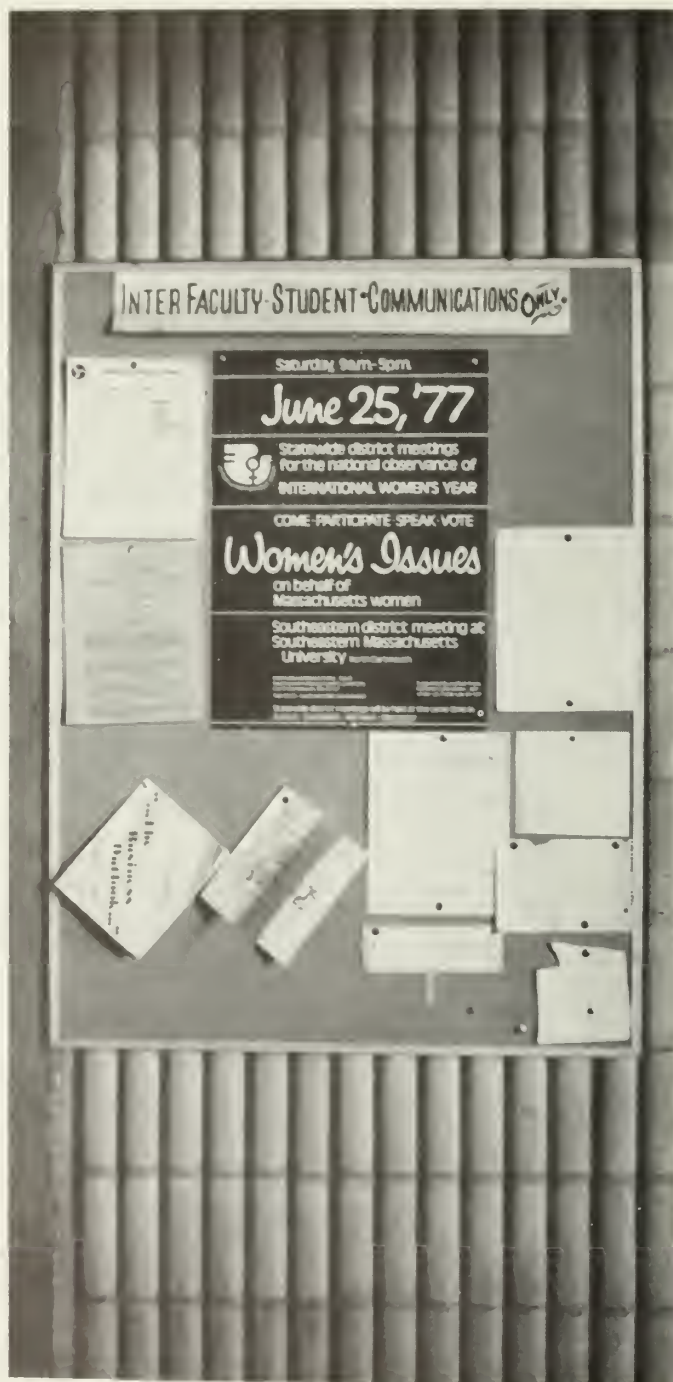
**PS 391-392 • 3 credits**  
**Research Seminar in Political Science**

The purpose of the seminar is to train students in the techniques of independent research. Attention is given to formulating research objectives, collecting, processing, and analyzing data, and bibliographic research, and utilizing the major substantive findings of social scientists.  
Prerequisite: Junior or senior standing. Non-majors admitted only with consent of instructor.

**PS 399-400 • variable credits**  
**Senior Independent Study**

**PS 401 • 3 credits**  
**Classical Political Thought**  
Covers major classics prior to the modern age. Includes Plato, Aristotle, St. Thomas, Machiavelli, Calvin, More and Hobbes. Consideration given to selected non-Western classics.  
Prerequisite: Upper class standing.

**PS 492 • 3 credits**  
**Senior Research Seminar in Political Science**  
Carries forward the work of junior level seminars (PS 391-392) at more advanced level.  
Prerequisite: PS 391 or 392 or consent of instructor, preferably Senior standing. Non-majors admitted only with the consent of instructor.





# Pre-Medical Program

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## Pre-Medical Advisory Committee

A Faculty Pre-Medical Advisory Committee assists all pre-medical (pre-medical, pre-dental, pre-veterinary, pre-paramedical) students in their pursuit of admission to a professional school.

1. The committee meets once each semester with each student who declares himself or herself a pre-med. The committee reviews the student's program and progress and makes recommendations.
2. The committee serves as the principal source of advice in course selection for a pre-medical program.
3. The committee actively seeks up-to-date information about medical school admission requirements and makes direct contact with the medical schools whenever possible.
4. The committee serves as a

clearing house for letters of recommendation going to the medical schools.

5. The committee serves in association with the Student Pre-medical Association. In addition to its other functions, the student association serves as a principal determiner of who the pre-meds are and puts the students in contact with the faculty committee.

Any student who deems himself or herself a pre-med should either contact the Student Pre-medical Association or a member of the Faculty Pre-Medical Advisory Committee.



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## Faculty and Fields of Interest

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**Howard Benesch** • clinical psychology

**John Caruso** • human learning and applications to instruction

**Julie Cleare** • clinical and developmental psychology

**Morton Elfenbein** (chairperson) • social psychology and group behavior

**Barry Haimson** • psychophysiology and perception

**William Holt** • child psychology and learning theory

**Robert Pallatoni** • clinical psychology and behavior disorders

**James Riley** • behavior modification and community psychology

**Michael Rossi** • community psychology and psychopharmacology

**Lynn Marie Tondat** • physiological psychology and neural control of regulatory mechanisms

**Donald Walker** • organizational psychology and counseling

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## Psychology Major

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Students who major in psychology find primary employment opportunities in personnel management, secondary and elementary school education, social work, and as aides in mental health establishments. Higher level psychological activities such as counseling psychotherapy, university instruction, psychological research and various administrative mental health positions generally require a master's degree or preferably a doctorate in psychology. All psychology majors are required to complete successfully General Psychology (PY 101), Statistics (PY 205), and Experimental Methods (PY 210). Twenty-one remaining credits must be taken from other courses offered by the department. After taking the required core courses the student is free to pick and choose among the remaining courses to obtain the required number of course credits. This system is designed for the student who wishes to obtain a broad liberal education in the field and no basic change in this system is envisioned.

Currently, the department is introducing innovative directed programs of study for psychology majors. These directed programs will be designed to provide guides in selecting courses from the total curriculum for students with specific areas of interest in psychology related to future plans for vocational careers or graduate study. These options are in the areas of: human services, clinical, human services, community, human learning and development, social-personality, and perceptual learning.

Psychology majors are advised to consult with members of the department concerning the above-mentioned concentrations. The psychology department has prepared a brochure available to students outlining these options more specifically.



## Requirements

Psychology majors are required to take a minimum of 30 credits in psychology. Courses required for all Psychology majors are:

PY 101	General Psychology	3
PY 205	Statistics	3
PY 210	Experimental Methods	3

## Psychology Courses

### **PY 101 • 3 credits** **General Psychology**

Introduction to psychology through a study of development, learning, perception (including sensation), motivation (including emotion), thinking, intelligence, and personality.

### **PY 201 • 3 credits** **Child Psychology**

A study of the child from both the developmental and experimental approaches. Topics which may be included are: methodology in child research, heredity and environment controversy, intelligence, language and communication, learning in infancy and childhood, and motor, cognitive, perceptual, personality and social development.  
Prerequisite: PY 101

### **PY 202 • 3 credits** **Abnormal Psychology**

Study of development and characteristics of behavior disorders. Topics to be considered include: cause of abnormal behavior, transient personality reaction to acute or special stress, psychoneurotic disorders, and therapeutic measures.  
Prerequisite: PY 101

### **PY 203 • 3 credits** **Psychology of Adjustment**

A study of all sides of the complex problems of mental health and

mental illness. The emphasis is on psychosocial models rather than medical disease models. Psychoanalytic and behavioral approaches are contrasted with humanist-existential concepts.  
Prerequisite: PY 101

### **PY 204 • 3 credits** **Social Psychology**

The study of experimental findings, theoretical and methodological issues in understanding the individual in a social context.

### **PY 205 • 3 credits** **Statistics for Psychology**

An introduction to the analysis of quantitative data in psychology, including descriptive statistics, probability, and the application of inferential procedures.  
Prerequisite: PY 101

### **PY 210 • 3 credits** **Experimental Methods**

An introduction to the design, administration and analysis of psychological experiments, emphasis also on evaluation of research and scientific report writing.  
Prerequisite: PY 101, 205

### **PY 215 • 3 credits** **Adolescent Psychology**

A survey of theories of adolescent personality development, psychopathology and current



used in the field  
Prerequisite: PY 101

**PY 220 • 3 credits**

**Educational Psychology**

Exploration of the relationships between basic psychological principles and their application to instructional environments  
Prerequisite: PY 101

**PY 302 • 3 credits**

**Psychological Testing**

An introduction to basic principles and techniques of psychological testing and a study of the major types of tests  
Prerequisite: PY 101, PY 205

**PY 303 • 3 credits**

**Psychology of Learning**

A survey of learning principles from simple conditioning to complex creative behavior  
Prerequisite: PY 101, PY 205, PY 210

**PY 305 • 3 credits**

**Physiological Psychology**

The study of the physiological basis of behavior. An emphasis on the neurological and hormonal factors underlying sensation, perception, motivation, emotion and learning  
Prerequisite: PY 101, PY 205, PY 210

**PY 310 • 3 credits**

**Analysis of Data**

Stress on advanced statistical analyses for the social sciences together with a practical minimum of APL computer skills  
Prerequisite: PY 101, PY 205, PY 210

**PY 320 • 3 credits**

**Psychology of Perception**

An overview of research methods and results in the area of perception. Special emphasis on role of stimulus variables and attention on the perceptual constancies: color, size, form

and space perception

Prerequisite: PY 101, PY 205, PY 210 (may be taken concurrently)

**PY 330 • 3 credits**

**Personality Theory**

Study of personality structure and development through analysis of the theoretical contributions of major personologists  
Prerequisite: PY 101, PY 202, jr or sr psychology major

**PY 350 • 3 credits**

**Psychology of the Exceptional Child**

A theoretical and practical analysis of exceptional intellectual, emotional or physical behavior in children  
Prerequisite: PY 101, PY 201

**PY 370 • 3 credits**

**Group Dynamics**

This course is designed to familiarize the student with group dynamics as both an experiential and empirical science. Includes sensitivity training group.  
Prerequisite: PY 101, PY 204, senior psychology major or consent of instructor

**PY 375 • 3 credits**

**Psychology of Sex Differences**

This course is designed to stimulate discussion among men as well as women, by exploring topics such as the development of sex differences, socialization practices, attitudes, values and role expectations which affect the self-concept and interpersonal relationships  
Prerequisite: PY 101, PY 205, PY 210

**PY 380 • 3 credits**

**Advanced Laboratory in Social Psychology**

An emphasis on social psychology as an experimental science focusing on the issues of methodology, design of experi-

ments, manipulation of social variables, the ethics of experimentation, and the presentation of research findings.  
Prerequisite: PY 101, PY 205, PY 210, PY 204

**PY 402 • 3 credits**

**Theories of Learning**

A comparative study of the history and current status of the major theories and models of learning.

Prerequisite: PY 101, PY 205, PY 210, PY 303

**PY 404 • 3 credits**

**History of Psychology**

A survey of the history of psychology within the context the major theoretical systems developed within the field since the emergence of psychology as an experimental science.  
Prerequisite: PY 101, and any two of the following: PY 220, PY 303, PY 320, PY 305, PY 434, PY 418

**PY 406 • 3 credits**

**Counseling I**

Introduction to philosophies, theories, and techniques of counseling, and demonstrations of various psycho-therapeutic methods.  
Prerequisite: PY 101, PY 202, PY 330. Senior psychology majors only and/or permission of instructor.

**PY 407 • 3 credits**

**Counseling II**

Continuation of PY 406, plus tape experiences and some supervised practicum experiences.  
Prerequisite: PY 406, and permission of instructor

**PY 409 • 3 credits**

**Community Psychology**

A survey of the theories, techniques, and goals of community psychology, particularly as they

relate to the community mental health movement  
Prerequisite: PY 101, and any three of the following: PY 201, PY 202, PY 215, PY 330, PY 406.

**PY 414 • 3 credits**  
**Advanced Child Lab**

After a general introduction to the field of clinical psychology students study techniques of establishing rapport with children; interviewing, test administration, scoring, and interpretation; and report writing  
Prerequisite: PY 101, PY 201, PY 205, PY 210, PY 302.

**PY 416 • 3 credits**  
**Seminar in Clinical Psychopathology**

A multidisciplinary approach to the study of psychopathology stressing the analytic and social-learning positions. Critical examination of the symptomatology and dynamics of behavioral and developmental disorders.  
Prerequisite: PY 101, PY 202, PY 330, and senior psychology majors.

**PY 418 • 3 credits**  
**Behavior Modification**

The course begins with a discussion of ethical standards relevant to the modification of human behavior. Psychodynamic theory is reprised to provide a contrasting theoretical perspective to the therapeutic use of behavior modification techniques. Classical and operant conditioning procedures are reviewed.  
Prerequisite: PY 101, PY 205, PY 210, PY 303.

**PY 432 • 3 credits**  
**Seminar in Comparative Psychology**

Study of genetic environmental influences on the development and evolution of animal behavior  
Prerequisite: PY 101, PY 205, PY 210, PY 305.

**PY 434 • 3 credits**  
**Cognitive Processes**

An advanced seminar in the psychology of human symbolic activity, stressing thinking and problem solving.  
Prerequisite: PY 101, PY 205, PY 210, PY 303.

**PY 435 • 3 credits**  
**Motivation**

A survey of the theoretical and empirical aspects of motivation as they relate to physiological processes  
Prerequisite: PY 101, PY 205, PY 210, PY 303.

**PY 440 • 3 credits**  
**Seminar in Psychoanalytic Theory**

Critical study of Freudian and neo-Freudian conceptualizations of the psycho-sexual development of the individual; consideration of psychoanalytic approaches to neurosis and psychotherapy.  
Prerequisite: PY 101, PY 202, PY 330.

**PY 443 • 3 credits**  
**Advanced Topics in Learning**

Seminar and individual research on a series of advanced topics in the psychology of learning.  
Prerequisite: PY 101, PY 205, PY 210, PY 303.

**PY 447 • 3 credits**  
**Advanced Laboratory in Perception**

An intensive analysis of the methods and research findings in selected areas of perception. An experimental project in the area of perception is required.  
Prerequisite: PY 101, PY 205, PY 210, PY 320.

**PY 448 • 3 credits**  
**Seminar in Perceptual Learning and Development**

Critical review of selected theories, methods, and research

findings concerning perceptual learning and development. Special emphasis on perceptual constancies, space, pattern, and form perception.  
Prerequisite: PY 101, PY 201, PY 205, PY 210, PY 303, PY 320.

**PY 480 • 3 credits**  
**Field Work in Counseling Psychology**

A practical one day a week assignment in a cooperating state or private mental health facility. Where permitted, students would participate in learning about counseling, interviewing, referral and some evaluation techniques. On site and departmental supervision is required, with a detailed final report.  
Prerequisite: PY 202, PY 302, PY 370, PY 406 and permission of instructor

**PY 481 • 3 credits**  
**Practicum in Community Psychology**

Students and instructor develop a community centered project involving problem assessment, program development and/or program evaluation.  
Prerequisite: PY 409

**PY 495 • variable credits**  
**Independent Study**

**PY 496 • variable credits**  
**Directed Study**

**PY 498 • 3 credits**  
**Individual Honors in Psychology**

Individual instruction and research on a selected topic. May be taken for one or two semesters with any faculty member in the department  
Prerequisite: Admission by the department to the honors program.

**PY 499 • 3 credits**  
**Individual Honors in Psychology**

Course description same as above.

# Sociology and Anthropology

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## Faculty and Fields of Interest

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**John Bush** • organizations, research methods, urban affairs, Black identity

**Geraldine Gamburd** • social anthropology, myth and ritual, structures of power and inequality

**Joel B. Gayman** • theory, sociology of knowledge, social psychology, and social psychiatry

**Jane Hilowitz** • American society, European society, Social change

**Toby Huff** • sociology of religion, personality and culture, theory

**Donna Huse** • social psychology, community sociology, peer-counseling

**Donald McKinley** • sociology of education and knowledge, family and kinship, mass society

**R. Penn Reeve** • anthropology, comparative ethnic relations, social stratification

**Edward Ryan** • methodology, field studies, Eastern and South-eastern Asia, linguistics, socio-cultural change

**Gene Sharp** • social thought, conflict and war, social movements and revolution, political sociology

**Jack Stauder** (chairperson) • anthropology, political economy, social movements

**Virgilio Zanin** • sociology of deviant behavior, criminology, sociology of law

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## Sociology Major

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The department's major focus is the study of human beings and the analysis of collective action and the socio-cultural settings in which it occurs. The department offers courses in sociology, anthropology, social work and a number that are primarily interdisciplinary in nature. Sociology is the study of social behavior in its different forms. It is the study of whole societies and their basic institutions (e.g. religion). It also studies human groups on a smaller scale such as the family, peer group, and neighborhood.

Anthropology and sociology overlap somewhat though an anthropologist is more likely to study non-western societies and to emphasize somewhat more the biological base of human behavior, human evolution and a society's ethos. Social work is

the application of concepts from disciplines such as: sociology, psychology, and anthropology to an area of concern in modern society. Social work and social action growing out of the basic disciplines (above) increasingly attempt to not only study and treat but create new social realities.

A major in this department may be chosen for the inherent satisfaction the knowledge provides. It also may be the foundation for social action or for graduate work in a basic discipline.

Those courses listed "SO or AN" are courses that bridge the fields of sociology and anthropology. Students may elect to gain credit in either field by registering in the course and selecting either prefix.



**Requirements**

Majors are required to take 30 credits in the department.		Semester Credits
SO	101 or AN 111 or SO 113 - AN 113	3
SO	206 or 401	3
SO	200 or AN 208 or SO 402 or AN 405	3
	Electives in Sociology or Anthropology	21
		30



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## **Sociology and Anthropology Courses**

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### **SO 101 • 3 credits**

#### **Introduction to Sociology**

A survey of the fundamental principles of sociology and the basic factors conditioning social processes and social behavior.

### **SO 102 • 3 credits**

#### **Social Problems**

A survey of the various social problems in the contemporary world. Special emphasis will be placed upon analysis of social problems in American society.

### **AN 110 • 3 credits**

#### **Introduction to Physical Anthropology**

A survey of the fundamental concepts of the science of man. This course concentrates upon the physical evolution of man, the comparison of the behavior of currently existing primates, and interdisciplinary searches into topical questions such as the evolution and nature of aggression and/or hierarchy and dominance.

### **AN 111 • 3 credits**

#### **Introduction to Cultural Anthropology**

An introduction to the basic concepts of social and cultural anthropology. Readings emphasize the comparative study of societies at different levels of sociocultural integration and from different areas of the world.

### **SO 113 or AN 113 • 3 credits**

#### **Introduction to Social and Cultural Behavior**

This course offers a combined introduction to Anthropology and Sociology, useful both for those who do not have the occasion to take an introductory course in each field, and for those who want a general overview to help them decide which upper-level courses to proceed to.

### **SO 200 • 3 credits**

#### **Introduction to Sociological Thought**

An introduction to the enterprise of sociological theory. As such, it attempts to introduce students to the questions, problems and intellectual tasks of theorizing about society and our social lives as well as to expose students to some of the most important competing ways in which previous social theorists have gone about this task.

Prerequisite: SO 101

### **SO 202 • 3 credits**

#### **Social Psychology**

The course explores some of the fundamental questions of social psychology—what is a human being? what are human relations? what is a group?—from the social perspective generated by psychoanalytic theory. The focus is on the relation of the individual to the group when both are in the process of transformation. Readings from various social psychologists.

### **SO 203 • 3 credits**

#### **Introduction to Social Work**

The role of social work in meeting human needs, review of social science concepts and their relevance to social work, methods and processes of social work practice.

### **SO 204 or AN 204 • 3 credits**

#### **The American Indian**

A brief review of the pre-history of man in the Americas. A study of the people and cultures of America before the arrival of Europeans. The interaction between various Indian groups and different European forces. Historical and social outcomes of that interaction. A focus on the status of Indian groups in the United States in recent times.

### **SO 205 • 3 credits**

#### **Industrial Society and Human Problems**

A discussion of the values of modern society; of the structure of factory and bureaucracy. An analysis of the fragmentation of the community and of personal stress as effects of a complex society. Deviant and counter-cultural responses to industrial society and its power structure.

Prerequisite: A social science course

### **SO 206 • 3 credits**

#### **Introduction to Research Methods**

An introduction to the concepts and methodology of social science research. A requirement for SO/AN majors.

Prerequisite: SO 101 or AN 111 or SO/AN 113.

### **AN 208 • 3 credits**

#### **Introduction to Anthro- pological Theory**

A historical, analytical and current review of the anthropological perspective. A study of several themes basic to anthropological thinking including comparison, holism, systems and processes, folk versus analytical perspectives, and case studies. The systematic nature of anthropological inquiry with testing of findings, theories, laws, generalizations and modes of research and interpretation will be noted in the reading of original sources.

Prerequisite: AN 111

### **SO 210 or AN 210 • 3 credits**

#### **Culture and Personality**

An analysis of personality development with particular stress upon the cultural determinants of identity, character and motivation. The thesis of national character formation as well as socio-

cultural variations in psychopathology and normalcy will be examined

Prerequisite: SO 101 or SO 113 or AN 111 and PY 101.

**SO 212 • 3 credits**  
**American Culture and Education**

A discussion of the nature and origins of the values of the industrial west, especially America. The origins of higher education and the sciences and their emergence as the leaders in the development of those values. The interaction between society and the educational systems and resulting social trends. The internal structure of the educational institutions and their function in modern society; the role of the behavioral sciences in a "post-industrial" society and to higher learning.

Prerequisite: One course in a Social Science or Education.

**SO 220 • 3 credits**  
**Social Change**

Analysis of patterns and processes of social and cultural change. Examination of the role of science, technology and religion in the shaping of social and economic structures and processes. Attention will be given to the role of social movements in contemporary and historical cases of sociocultural change.

Prerequisite: SO 101

**AN 221 • 3 credits**  
**Premodern Social Systems**

A study of social order and disorder. Description of elementary forms of kinship using several ethnographies of people around the world. The analysis of social structures including features of opposition as well as those of order and complementarity.

Prerequisite: AN 111 or SO 113 or AN 113.

**SO 222 • 3 credits**  
**Sociology of Stratification**

The study of the various ways in which different societies assign their members to higher and lower positions of prestige, power and possessions. A sociological analysis of the ways in which a person's stratificational rank influences his personality and life-opportunities in society.

Prerequisite: SO 101 or AN 111 or SO 113 or AN 113.

**So 226 or AN 226 • 3 credits**  
**Sociology of Africa**

A survey of change and conflict in African society, historically and at present. Particular attention will be paid to the effects of colonialism and African resistance to it.

Prerequisite: None

**SO 227 or AN 227 • 3 credits**  
**Cultural Evolution**

The evolution of human societies from prehistoric to modern times. Focus will be the interaction between the development of technological forces and changes in social relations and institutions.

Prerequisite: SO 101 or AN 111 or SO 113 or AN 113.

**SO 228 • 3 credits**  
**Sex Roles and Sexuality in American Society**

This course will study the changing definitions of the roles of men and women in American Society as we perceive it from our experience and from a social, historical, biological perspective. Class sessions will include the following: the development of male and female in the evolutionary system; human and animal sexuality; cross-cultural sexual identities; images of male and female in American literature, movies and the popular imagination; socialization and the development of sexual iden-

tity; problems of courtship and intimacy.

Prerequisite: Permission of instructor.

**SO 230 • 3 credits**  
**Black Identity and the Social World**

This course is especially designed for black students and white students who are concerned with black heritage. Considerable time will be spent in studying the heritage of black people. We will examine the African past through literature, etc., examine the survival techniques which blacks developed in order to survive in an alien world, and carefully analyze the collective identity of black people at the present time in history.

Prerequisite: None

**SO 232 or AN 232 • 3 credits**  
**Portuguese in the Americas**

A sociological examination of the Portuguese experience in the U. S. and Brazil with focus on immigration, inter-ethnic relations, problems of adjustment and opportunities in the two countries.

**SO 240 • 3 credits**  
**Dynamics of Community Organization**

This course will provide students with an analysis of the theory and practice of community organizing with particular emphasis on the development of social action and community development techniques on the grass-roots level. This course will be conducted as a seminar with student participation in class discussions to be the major vehicle for the exchange and development of ideas. In addition, mini-lectures, field simulations, role-playing, guest speakers and field observations will be utilized.



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**SO 248 or AN 248 • 3 credits**  
**Alternative Communities in Industrial Society**

This course encourages thought about the quality of experience in advanced industrial society and alternatives for regaining control over our life choices and livelihood. The technological alternatives to mass production are considered, and egalitarian communities in which members jointly control decisions through participation in local economies, politics, and technology are studied.

**SO 251 • 3 credits**  
**Group Processes**

The class will present a theory of human potential, distress, and recovery, which is concerned with how to re-evaluate one's experience and life history from a powerful positive perspective. The class will use new rules of communication which allow equal time for everyone participating, stress the necessity both of sympathetic attention and spontaneous self-expression, and emphasize ways of communicating feelings that are repressed in everyday social relations. Prerequisite: Permission of instructor required. Interview with student required.

**SO 253 • 3 credits**  
**Urban Sociology**

An ecological and social psychological analysis of urban life in the United States. Urban institutions and their social relations with the urban community are given special attention. Prerequisite: SO 101.

**SO 255 or AN 255 • 3 credits**  
**Peoples and Cultures of Europe**

An examination of selected societies of Europe from an anthropological perspective, with special attention paid to rural



urban relations and to processes of transformation and development. An attempt will also be made to account for the similarities and differences of the peoples and societies studied. Prerequisite: SO 101 or AN 111 or SO 113 or AN 113.

**SO 257 • 3 credits**  
**Comparative Group Processes**  
Communication in this class will be based on a different set of rules for group interaction than those which characterize most groups in this society. The goal of the class is to create a group based on the following principles: democratic communication, validation of communication, emotional expressiveness, sympathetic attention and rational re-evaluation. The experience of this group will be a vantage point which will enable a comparison with the assumptions and values implicit in "normal" social interactions. Prerequisite: Permission of instructor.

**AN 261 • 3 credits**  
**Introduction to Archaeology**  
An introduction to archaeology as a means of discovering and understanding prehistoric cultures. A discussion of the major aims, concepts, techniques and controversies of contemporary archaeology. Attention will be given to the development of prehistoric subsistence patterns, the beginnings of animal and plant domestication and the rise of complex civilizations. Familiarity with anthropology is desirable but not required.

**SO 301 • 3 credits**  
**The Sociology of Work**  
The study of the social organization of work in past and contemporary societies. Particular attention will be paid to the

growth and consequences of the division of labor in society, including our own society. Prerequisite: SO 101 or AN 111 or SO 113 or AN 113.

**SO 302 • 3 credits**  
**The Sociology of Art**  
The relationship between society and art and artists. Various problems will be taken up concerning the recruitment and careers of artists and the effects that these have had on their artistic work. Prerequisite: either SO 101, SO 111, SO 113 or AN 113, PY 101, History of Art or permission of Instructor.

**SO 303 or AN 303 • 3 credits**  
**Family and Kinship: An Interdisciplinary Approach**  
A study of the functions and stresses of the family in complex society. A comparison of family behavior in folk and urban cultures, a study of bio-social life (erotic behavior, child care, and death) using the perspectives of several disciplines — psychoanalysis, sociology, and anthropology. Speculations on the future of the family. Prerequisite: A social science course.

**SO 304 or AN 304 • 3 credits**  
**Third World Development**  
A study of the "Third World"—its political economy and roots in world history and international relations. Focus on understanding the sources of underdevelopment and the possibilities for development. Prerequisite: SO 101, 111 or 113.

**SO 305 • 3 credits**  
**Political Sociology**  
An exploration of sociological perspectives on the study of power relationships, political communities, political processes

and institutions. Prerequisites: SO 101, SO 113 or AN 113, PS 101, 102 or permission of instructor.

**SO 306 • 3 credits**  
**Sociology of Knowledge**  
Investigation of the relations between knowledge and society; the problem of the social determination of knowledge. Prerequisite: SO 101, PI 201, one advanced social science course or permission of instructor.

**SO 307 • 3 credits**  
**Sociology of Conflict and War**  
An exploration of theories that humans are by nature aggressive or cooperative being, of the nature, sources and dynamics of social conflict generally and war in particular, and of possible alternatives to war. Prerequisite: SO 101 or permission of instructor.

**SO 308 • 3 credits**  
**Sociology of Religion**  
Comparative sociological analysis of religious phenomena, and religious movements in industrial and non-industrial societies. Examination of the interplay between religion and social structure. Discussion of the church-sect typology and the institutionalizing of religious belief systems. Consideration will also be given to the influence of religious creeds upon patterns of thought and action and on sociocultural change. Prerequisite: SO 101 or SO 113 or AN 113 and upperclass status.

**SO 309 or AN 309 • 3 credits**  
**Readings in Sociological and Anthropological Literature**  
This course is designed for students who would like to do reading and writing on specific sociological and anthropological

topics normally not included in the curriculum. Students will work on these topics under the close supervision of individual instructors. Prerequisite: Junior or Senior standing. Permission of instructor. Students are limited to one such reading course per semester.

**SO 310 • 3 credits**  
**Social Movements I**  
A sociological analysis of the origin and development of social movements with an emphasis on detailed study of particular social movements. Prerequisite: SO 101 or permission of instructor.

**SO 311 • 3 credits**  
**Social Movements II**  
A continuation of Social Movements I with the exploration of additional case histories. Prerequisite: SO 310

**SO 312 • 3 credits**  
**Deviant Behavior**  
Review of theory and research with emphasis on their implications for a general theory of deviant behavior. Sociological knowledge will be applied to the analysis of selected topics such as: organized crime, drug addiction, etc. Social factors and influences in deviant conduct are given heavy stress. Sociological analysis of the agencies of control will be included. Prerequisite: SO 101, Juniors and seniors.

**SO 314 • 3 credits**  
**Complex Organizations**  
This course is specifically concerned with the workings of large formal organizations such as universities, hospitals, prisons, government organizations, etc. Attention will be given to the social interactions within the or-

ganizations, and especially how organizations maximize efficiency given their bureaucratic structures  
Prerequisite: SO 101

**SO 315 • 3 credits**  
**Seminar in Non-Violent Conflict**

Advanced Seminar in subject indicated by the title  
Prerequisite: SO 322

**SO 319 • 3 credits**  
**Philosophy of Social Science**

This course explores the philosophical underpinnings of science and "sciencing", first in the natural sciences and then in the social sciences. The ideas of "facts", "laws", "theories", and "hypotheses" are examined in a philosophically rigorous form, leading to further questions such as, can a "scientific truth" ever be found to be "wrong"? Case studies of scientific explanation and advance from the history of the social and natural sciences are studied. Thus an effort is made to understand what "science" is supposed to mean in the natural sciences and then comparison and exploration of the same issues in the social sciences is carried out  
Prerequisite: SO 101 or 113 and one advanced SO course

**SO 321 or AN 321 • 3 credits**  
**Comparative Sociology of the Community**

Man everywhere lives in localized clusters. These communities vary in seemingly myriad ways: the life goals they define, social organization, homogeneity, size, fixity of location, political, economic, and cultural relations with the outside world, etc. Each is at once a mode of adaptation to the natural environment and constitutive of a particular socio-cultural milieu. The course will

examine various "community" forms with the aim of clarifying the nature of village, town, and city forms in American society.  
Prerequisite: Introduction to Sociology or Anthropology

**SO 322 • 3 credits**  
**Political Sociology of Nonviolent Conflict**

An examination of the sociopolitical techniques of nonviolent action (protest, noncooperation and intervention), including its power theory, historical development, dynamics, mechanisms, and application in social conflicts

Prerequisite: SO 101, AN 111 or SO 113 or AN 113

**SO 325 or AN 325 • 3 credits**  
**Peasant Society**

Comparative study of peasant societies in different parts of the world. Particular emphasis on the role played by peasants in the major events and political and economic transformations of the modern era

Prerequisite: SO 101 or AN 111 or SO 113 or AN 113

**AN 327 • 3 credits**  
**Myth and Ritual**

Exploration of the significance of myth and ritual and the history of its study. Myths and rituals of a world wide sample are analyzed from functional, structural and symbolic points of view  
Prerequisite: AN 111 or 113.

**SO 328 or AN 328 • 3 credits**  
**Cultural Ecology**

The study of culture and society from an anthropological and ecological approach, focusing on the interaction between human societies and their natural environment

Prerequisite: SO 101 or AN 111 or SO 113 or AN 113

**AN 330 • 3 credits**  
**Peoples of South Asia**

This course will introduce students to the variety of social systems found in South Asia, including India, Pakistan, Tibet, Nepal and Ceylon. The contrasts between wheat and rice farming areas; tribal and peasant societies, and highland and lowland peoples will be examined. The effects of industrialization will be considered. The value systems of Buddhism and Hinduism will be introduced briefly.  
Prerequisite: AN 111 or SO 113 or AN 113.

**SO 331 • 3 credits**  
**Race and Ethnicity**

A study of the concepts of "race" and "ethnic group" and the role these concepts play in social interaction and social differentiation.  
Prerequisite: SO 101 or 111 or 113.

**SO 332 • 3 credits**  
**Sociology of Revolution**

An examination of the phenomenon of mass popular revolutions, utilizing theoretical and analytical writings and case studies. Attention will be given to the social conditions in which revolutions occur, their objectives, dynamics of the revolutionary process, changes in power distribution, alternative techniques of revolutionary action, and on social consequences.

Prerequisite: SO 101 or AN 111 or 113 or permission of instructor

**SO 333 • 3 credits**  
**The Social Construction of Reality**

This course analyzes society as a product of mind, inquiring about the conscious processes within the individual which are the



condition for the existence of society. We will consider modifications of contrasting the "multiple realities" represented by myth, dreams, curing, childhood, and charismatic movements with the paramount reality of the everyday shared social world. Readings from Simmel, Schultz, Berger, Schachtel, Levi-Strauss, Freud, Casteneda, and Kierkegaard.  
Prerequisite: None

**SO 337 or AN 337 • 3 credits**  
**Comparative Ethnic Relations**

A comparative analysis of interracial and inter-ethnic relations in various areas of the world including the U. S., Latin America, Africa, and Europe. An examination of the causes of inter-ethnic conflict, assimilation, ethnic solidarity, and changes in ethnic identity.

**SO 340 • 3 credits**  
**Law and Society**

Investigation of problems in the sociology of law, including law-making processes, administration of justice and correctional systems. Comparative analysis of legal systems and their administration.

**SO 342 • 3 credits**  
**Organization of Criminal Behavior**

A survey of major theories in sociology of crime and delinquencies. The theories include those of Durkheim, Lombroso, Freud, Merton, Sutherland, and others. This course analyzes institutionalized societal responses to crime in terms of policies relating to arrest, the judicial process, and correctional institutions.

**SO 350 • 3 credits**  
**Readings in Sociological Literature I**  
Directed readings and analysis

in selected sociological topics.  
Prerequisite: Permission of instructor.

**SO 351 • 3 credits**  
**Readings in Sociological Literature II**

Directed readings and analysis in selected sociological topics.  
Prerequisite: Permission of instructor.

**SO 352 • 3 credits**  
**Readings in Sociological Literature III**

Directed readings and analysis in selected sociological topics.  
Prerequisite: Permission of instructor.

**SO 353 • 3 credits**  
**Readings in Sociological Literature IV**

Directed readings and analysis in selected sociological topics.  
Prerequisite: Permission of instructor.

**SO 360 or AN 360 • 3 credits**  
**Structures of Power and Inequality**

This course will consider many bases of inequality including the artificial distinctions of age, sex, race, and hereditary position in a family line, occupation, ethnicity and nationality. Talents and temperaments are often specialized to one sex, one class, one caste, etc. This course will explore what bases of inequality (whether one or many) are found within a number of social systems. These alternate social forms of inequality will be cross compared.  
Prerequisite: SO 101 or AN 111 or SO 113 or AN 113.

**SO 401 • 3 credits**  
**Research Methods**

Language and social inquiry. Issues related to ideas of knowing, explaining, understanding, confirming, etc.; valuative and affective elements in inquiry; empirical testability of propositions; quantitative and qualitative procedures of data collection and analysis; study of example cases.  
Prerequisite: SO 101 or AN 111 or SO 113 or AN 113 and one advanced course in a social science.

**SO 402 • 3 credits**  
**Sociological Theory**

This course focuses on the synthesizing and integrative functions of theory in the sociological enterprise. It seeks to awaken an awareness of the nature and role of concepts in theory construction, and to highlight the gains and losses which accrue in all linguistic statements about the world. The work of Marx, Durkheim, Weber, Veblen, Sorokin, G. H. Mead and R. K. Merton are given special attention, both as pioneering examples of theoretical innovation and as substantive points of departure for future inquiry.  
Prerequisite: SO 101 or SO 113 or AN 113 and one advanced sociology course.

**SO 403 • 3 credits**  
**Social Psychiatry**

An examination of the social criteria and processes by which the determination of sanity (competence) and insanity (incompetence) is made, maintained and enforced. The course will focus on both the inner experience of "madness" and on how this experience (and its related behavior) is defined and judged by others. An attempt will be made to recast the psy-

creation of mental illness into sociological terms and to work out the therapeutic implications of this reformulation.  
Prerequisite: SO 101 or AN 111, or SO 113 or AN 113 and SO 202 or 214, or permission of instructor.

**AN 405 • 3 credits**  
**Anthropological Theory**

A survey of the major theoretical orientations of anthropology toward the two central anthropological questions: the nature and origin of the human species, and the nature and origin of culture and civilization.  
Prerequisite: AN 111 or 113

**SO 407 or AN 407 • 3 credits**  
**Field Inquiry**

Research problem formulation, study design and the gathering and analysis of data in Sociology

and Anthropology, with primary emphasis upon field work. In addition to reading and seminar discussions, each student will participate throughout the semester in supervised field inquiry. Interested students should talk with the instructor about field work possibilities and arrangements. Upon the approval of the instructor, students may register for either 3 or 6 semester hours in a single semester or three semester hours in each of two successive semesters.  
Prerequisite: SO 101 or AN 111, or SO 113 or AN 113 and one advanced course in a social science, and permission of instructor.

**SO 430 • 3 credits**  
**Seminar on Advanced Problems in Sociological Theory I**

Selected theoretical problems, theorists or schools of thought examined in depth.  
Prerequisite: Permission of instructor.

**SO 431 • 3 credits**  
**Seminar on Advanced Problems in Sociological Theory II**

Selected theoretical problems, theorists or schools of thought examined in depth.  
Prerequisite: Permission of instructor.

**SO 496 or AN 496**  
**Directed Study**

**SO 900**  
**Contract Learning**



The College of  
Business and  
Industry





The College of Business and Industry is made up of three departments with majors in seven areas leading to the Bachelor of Science Degree.

**The Department of Accounting and Finance** • granting degrees in Accounting and Finance.

**The Department of Management** • granting degrees in Industrial Relations, Management and Marketing.

**The Department of Textile Sciences** • granting degrees in Textile Chemistry and Textile Technology.

Two specialized options are available in the Textile Technology program: • Fabrication • Dyeing and Finishing.

Students in the Department may also select Textiles with a Business or Engineering option.

The programs combine a general education with specialized study in specific areas of business and industry. Emphasis is placed upon the acquisition of a basic understanding of both underlying theories and their practical applications. Graduates of these programs are well prepared for careers in administration, industrial management, research, teaching, or for advanced study at the graduate level.



### Requirements for the Bachelor of Science Degree

#### Freshman English

All first year students in the College are required to take Freshman English (E101, 102), a two-semester course in the basic skills of communication, written and spoken, unless specifically excepted by an advanced placement test administered by the department of English.

#### Curriculum

Curriculum offerings reflect the need for adequate specialization with a core of basic occupational skills necessary to all fields of specialization, together with a substantial segment of liberal arts and humanities and the opportunity for diversification into changing allied areas.

Students have available to them such valuable tools as a

sophisticated computer installation (which may be used for a range of activities which includes case study analysis, business information production runs), television production facilities, audio-visual aids, electronic learning aids, an FM radio station and exposure to special problem approaches, such as case studies, research projects, in-field situation exposure, and cooperative professional organization seminars.

## Accounting and Finance



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### Faculty and Fields of Interest

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**Edward Cormier** • accounting, taxation

**Raymond Jackson** • finance, quantitative analysis, financial management

**Alphee Laflamme** (chairperson) • accounting, computer sciences

**Frederic Mattfield** • finance, financial institutions, investments

**J. Roland Richard** • accounting, auditing

**Louis Robitaille** • cost accounting, taxation

**Manuel Silvia** • accounting, business law

**Priscilla Tabachnik** • accounting, cost accounting

The department of Accounting and Finance offers two major programs leading to the Bachelor of Science Degree in Accounting or in Finance. The candidate for either degree must satisfactorily complete one of the specified curricula. The Accounting major must include in his program 15 semester credits in the humanities or social sciences. The Finance major is required to include 21 semester credits in the humanities and the social sciences.

**The Department of  
Accounting and Finance  
Freshman Core Program**

First Year				Semester Credits	First	Second
E	101	102	Freshman English		3	3
MA	101	102	Elements of College Mathematics		3	3
BA	115		Introduction to Business		3	
BA	112		Introduction to Computer Technology			3
AC	101	100	Accounting I and II		3	3
			Humanities or Social Science Electives		3	3
					15	15

**Accounting Major**

Accounting as a discipline and as a profession provides a means of obtaining information essential to modern industry in making policy decisions and in setting up plans for successful business management. It serves to maintain the system of checks and balances so as to reduce the need for supervision, and to minimize errors, fraud, and waste. Furthermore, accounting plays

an important role in setting and enforcing standards of performance which improve efficiency, coordination and integration of business activities.

The curriculum in accounting is designed to acquaint the student with the philosophy of accounting to give him a comprehension of accounting theory; to instruct him in technique; to develop his skill in the performance of

accounting; to train him to set up accounting systems and to interpret accounting data, and to develop a professional attitude.

Completion of a major in accounting prepares students for employment as public or industrial accountants or as accountants in government service and for graduate study in accounting and business.

**Requirements**

Second Year				Semester Credits	First	Second
EC	231	232	Economics I and II		3	3
MA	231	232	Elementary Statistics and Decision Theory		3	3
AC	201	202	Intermediate Accounting I and II		3	3
			Natural or Applied Science Electives		3	3
MK	321		Principles of Marketing		3	
			Humanities or Social Science Electives			3
					15	15

Third Year				Semester Credits	First	Second
BA	321	322	Quantitative Business Analysis I and II		3	3
AC	301	302	Advanced Accounting I and II		3	3
BA	311	312	Legal Framework I and II		3	3
FI	312		Business Finance		3	
AC	351	352	Cost Accounting I and II		3	3
BA	350		Business Communications			3
					15	15

Fourth Year				Semester Credits	First	Second
AC	401		Auditing		3	
AC	411	412	Taxation I and II		3	3
AC	441		Seminar		3	
MN	462		Management Policy			3
			Humanities or Social Sciences Electives		3	3
			Unspecified Electives		3	3
			Business Elective			3
					15	15



## Finance Major

The curriculum in finance seeks to develop in the student an understanding of business and economic structuring from the financial viewpoint. The basic objectives of the program are to provide an understanding of the contributions of the financial systems to the economy and to prepare students for careers in financial management of industrial and commercial enterprises; commercial, savings and mortgage banking investment analysis and portfolio selection, and financial positions in government.

## Requirements

Second Year				Semester Credits: First Second	
EC	231	232	Economics I and II	3	3
MA	231	232	Elementary Statistics and Decision Theory	3	3
			Natural or Applied Science Electives	3	3
AC	201	202	Intermediate Accounting I and II	3	3
			Humanities or Social Science Electives	3	3
				15	15
Third Year				Semester Credits: First Second	
BA	321	322	Quantitative Business Analysis I and II	3	3
BA	350		Business Communications		3
BA	311		Legal Framework of Business I	3	
FI	381		Money and Banking	3	
FI	398		Financial Institutions	3	
FI	312		Business Finance	3	
FI	392		Fiscal Policy		3
FI	382		Budgeting and Profit Planning		3
			Humanities or Social Science Elective		3
				15	15
Fourth Year				Semester Credits: First Second	
FI	483		Investment Analysis	3	
FI	484		Federal Tax Accounting		3
FI	485		Seminar	3	
FI	493		Financial Management of Corporations		3
MN	462		Management Policy		3
			Economic Elective	3	
			Business Elective	3	
			Humanities or Social Science Electives	3	3
			Unspecified Elective		3
				15	15

# Management

## Faculty and Fields of Interest

**Howard Brown** (chairperson)  
• general management, organization development

**Roger Deveau** • quantitative analysis and management systems

**Frank Golen** • advertising, marketing, real estate, insurance

**Charles Hague** • business law

**Thomas Higginson** • industrial management, labor relations

**Merritt LaPlante** • marketing management and research, retailing

**Richard Legault** • computer science, operations management

**Dean J. Saluti** • management information systems, computer science

**Donald Wetmore** • industrial relations, human resource development

**Robert Witherell** • human relations, computer science

The Department of Management offers three major programs leading to a Bachelor of Science Degree: Industrial Relations, Management, and Marketing.

The candidate for the degree must satisfactorily complete one of the specified curricula. The Industrial Relations and Marketing majors must include in their programs 21 semester credits in the humanities and social sciences. The Management major is required to have 18 semester credits in the humanities and social sciences.



## The Department of Management Freshman Core Program

First Year				Semester Credits:	
				First	Second
E	101	102	Freshman English	3	3
MA	101	102	Elements of College Mathematics	3	3
BA	115		Introduction to Business	3	
BA	112		Introduction to Computer Technology		3
AC	101	102	Accounting I and II	3	3
			Humanities or Social Science Electives	3	3
				15	15

## Industrial Relations Major

Industrial Relations is devoted to the study of the human side of management. Its objective is to offer an understanding of problem solving in one of the most critical and interesting problem areas in organizations, the human relations area. Included are studies of Personnel Management, a developing field with growing career opportunities, Labor Relations, and the relation of government regulations to equal opportunities, safety, union relations and other key management concerns.

Industrial Relations concentrates on a people-centered approach which is vital to success in a wide range of management careers.

## Requirements

Second Year				Semester Credits	First	Second
EC	231	232	Economics		3	3
MA	231	232	Elementary Statistics and Decision Theory		3	3
			Natural or Applied Science Electives		3	3
IR	394		Negotiations, Mediation, Arbitration of Collective Bargaining Agreements		3	
BA	311		Legal Framework of Business			3
			Humanities or Social Science Electives		3	3
					15	15
Third Year				Semester Credits	First	Second
BA	321	322	Quantitative Business Analysis I and II		3	3
IR	396		History of Trade Unionism		3	
MN	341		Production Management		3	
MN	373		Human Relations in Business		3	
MK	321		Principles of Marketing		3	
MN	395		Managerial Psychology			3
MN	342		Time and Motion Study			3
BA	350		Business Communications			3
			Humanities or Social Science Elective			3
					15	15
Fourth Year				Semester Credits	First	Second
IR	421		Labor Management		3	
IR	422		Personnel Management			3
IR	481	482	Industrial Relations Seminar		3	3
IR	462		Manpower Resources			3
MN	432		Administrative Practices			3
			Business Elective		3	
			Humanities or Social Science Electives		3	3
			Unspecified Elective		3	
					15	15



## Management Major

The management program gives the students a broad perspective of the organization and operation of large and small business enterprises. Careful selection, by the student, of junior and senior year elective business courses allows for alignment of coursework with the student's career goals. In addition, it is suggested that humanities and social sciences electives in the areas of sociology, psychology, political science and economics be considered as particularly useful for the management student.

Further objectives of the curriculum are the improvement of the student's ability to identify problem areas and to make sound value judgments, the resources in business, and emphasizing the analytical approach to decision making. To this end, the SMU Contract Learning program is strongly recommended for management students. This and other special program interests should be discussed at the earliest opportunity with the student's faculty advisor.

## Requirements

Second Year				Semester Credits: First Second		
EC	231	232	Economics	3	3	
MA	231	232	Elementary Statistics and Decision Theory	3	3	
BA	311		Legal Framework of Business	3		
BA	350		Communications in Business			3
BA	214		Information Systems			3
			Natural or Applied Science Electives	3	3	
			Humanities or Social Science Elective	3		
				15	15	
Third Year				Semester Credits: First Second		
BA	321	322	Quantitative Business Analysis I and II	3	3	
MK	321		Principles of Marketing	3		
MN	341		Production Management	3		
MN	373		Human Relations in Business	3		
FI	312		Business Finance			3
MN	372		Managerial Economics			3
			Business Elective	3		
			Humanities or Social Science Electives			6
				15	15	
Fourth Year				Semester Credits: First Second		
MN	431		Business Policy	3		
IR	421		Labor Management	3		
IR	422		Personnel Management			3
MN	461		Industrial Management	3		
			Business Electives	3		6
			Humanities or Social Science Elective	3		
			Unspecified Electives			6
				15	15	

## Marketing Major

The marketing curriculum is designed to prepare students for successful careers in the many phases of marketing and distribution of products and services throughout the economy. Courses are oriented toward problem solving and management decision making. The total curriculum emphasizes knowledge and competence in marketing that will enable the graduate to progress well in the early stages of his career; to develop the ability to analyze, plan, organize, coordinate, motivate

and control; to think creatively; to communicate effectively, and to gain broad perspectives essential to the attainment of ownership or executive management responsibilities. Further career opportunities are available as research analysts, sales managers, directors of marketing programs or professional sales personnel.

## Requirements

Second Year				Semester Credits: First      Second	
EC	231	232	Economics	3	3
MA	231	232	Elements of Statistics and Decision Theory	3	3
BA	311		Legal Framework of Business	3	
BA	350		Business Communications		3
			Natural or Applied Science Electives	3	3
			Humanities or Social Science Electives	3	3
				15	15
Third Year				Semester Credits: First      Second	
BA	321	322	Quantitative Business Analysis I and II	3	3
FI	312		Business Finance		3
MN	373		Human Relations in Business (or)		
IR	422		Personnel Management	3	
MK	321		Principles of Marketing	3	
MK	330		Promotional Strategy		3
			Marketing Elective		3
			General Business Elective	3	
			Humanities or Social Science Electives	3	3
				15	15
Fourth Year				Semester Credits: First      Second	
MN	431		Business Policy	3	
MK	422		Marketing Management		3
MK	451		Marketing Research	3	
			Marketing Electives	6	6
			Marketing or General Business Elective		3
			Humanities or Social Science Elective	3	
			Unspecified Elective		3
				15	15

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## Accounting Courses

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**AC 101 • 3 credits**  
**Accounting I**

Accounting theory is demonstrated through the analysis of business transactions, original entries, ledger and trial balances, financial statements. Accounting is shown as a tool of management.

**AC 102 • 3 credits**  
**Accounting II**

A continuation of AC 101. The development of partnership and corporation accounting methods and procedures, financial statements, statements of application of funds, and effects of automation in accounting procedures are considered.  
Prerequisite: AC 101

**AC 201 • 3 credits**  
**Intermediate Accounting I**

Fundamental accounting concepts are reviewed. The balance sheet and income statements are critically reviewed. A detailed analysis is then begun on the major balance sheet classifications with their corresponding effect upon related income statement accounts.  
Prerequisite: AC 102

**AC 202 • 3 credits**  
**Intermediate Accounting II**

The completion of the detailed analysis on the major balance sheet classifications with their corresponding effect upon related income statement accounts.  
Prerequisite: AC 201

**AC 301 • 3 credits**  
**Advanced Accounting I**

A detailed study of partnerships and corporations including business combinations and segmental reporting of business entities.  
Prerequisite: AC 202

**AC 302 • 3 credits**

A continuation of AC 301 with emphasis on multinational companies, bankruptcy, installment and consignment sales and accounting for non-profit entities.  
Prerequisite: AC 301

**AC 351 • 3 credits**  
**Cost Accounting I**

Cost determination and measurement through the job order cost and process cost systems are developed with detailed examination of the accounting for materials, labor and overhead costs.  
Prerequisite: AC 202

**AC 352 • 3 credits**  
**Cost Accounting II**

A continuation of AC 351 with emphasis on providing information for management's planning and control functions through budgets, standard costs, analysis of variances, gross profit analysis, direct costing, and cost-volume-profit analysis.  
Prerequisite: AC 351

**AC 361 • 3 credits**  
**Industrial Accounting**

A presentation of the basic accounting principles, procedures, and terminology as they apply to a manufacturing organization. Emphasis is placed on the analysis of operating statements and their significance to management, creditors and stockholders.  
Prerequisite: Engineering or Textile Student

**AC 401 • 3 credits**  
**Auditing**

The qualifications and professional code of conduct of the auditor are discussed. Attention is then focused upon auditing procedures including the preparation of audit working papers and other steps required in the

course of and audit.  
Prerequisite: AC 302

**AC 411 • 3 credits**  
**Taxation I**

Federal Income Tax problems confronting the individual taxpayer including the self-employed individual.

**AC 412 • 3 credits**  
**Taxation II**

A continuation of AC 411 with emphasis on the preparation of partnership and corporation tax returns.  
Prerequisite: AC 411

**AC 441 • 3 credits**  
**Accounting Seminar I**

An advanced level accounting course involving the discussion of specialized areas of accounting not covered previously; detailed analysis of accounting releases and areas of special interest, augmented by visiting outside lecturers.  
Prerequisite: AC 352



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## General Business Courses

### **BA 112 • 3 credits** **Introduction to Computer Technology**

An introduction to data processing emphasizing the use of computing machinery to solve information needs. Common business applications are used to examine a wide range of methods. The FORTRAN programming language is employed with interactive computing facilities to aid in understanding how the computer processes data.

### **BA 115 • 3 credits** **Introduction to Business**

A study of business organization centering on form, philosophy, activities within it, influence on the economy, and responsibility to society. It is meant to help the student develop a better understanding of the free enterprise system. (BA 116 may be substituted.)

### **BA 116 • 3 credits** **Fundamentals of Business Enterprise**

A primary emphasis in the course is placed on the study of the history and form of the business enterprise, the many activities that take place within it, and the role of business in the economy. Serious attention is paid to several of the more recent issues of concern to business such as social responsibility, material shortages, etc. (BA 115 may be substituted.)

### **BA 214 • 3 credits** **Information Systems**

A beginning course in systems analysis designed specifically for the student with prior knowledge of data processing and computer technology. Emphasis is placed on the interrelationship of each phase of systems de-

velopment and the mastery of the tools of the systems analyst. Prerequisite: BA 112

### **BA 311 • 3 credits** **Legal Framework of Business I**

A study of contracts and the Uniform Commercial Code as it relates to sales, commercial paper, and secured transactions.

### **BA 312 • 3 credits** **Legal Framework of Business II**

A study of the laws governing debtors, creditors and agencies. The formation, operation, and liquidation of the partnership and corporation are also discussed. Personal and real property including bailments, wills, estates and trusts are also covered. Prerequisite: BA 311

### **BA 321 • 3 credits** **Quantitative Business Analysis I**

OBA I & II: A two semester course designed to introduce the student to a wide range of quantitative decision making techniques in widespread business use today and to the processes of quantitative analysis. Interactive computing facilities and the case method are utilized in the preparation of solutions to problem business situations.

### **BA 322 • 3 credits** **Quantitative Business Analysis II**

Continuation of BA 321. Prerequisite: BA 321

### **BA 350 • 3 credits** **Communications in Business**

A course in communication skills concentrating on the application of these skills in the business arena. Emphasis is placed on the development of techniques in such areas as business report writing, pro-

fessional presentations, job interviews, applications, resume writing, memos, dictation, and the conduct of meetings.

### **BA 370 • 3 credits** **ANS COBOL Language**

An independent study course designed to train students to code and debug application programs using the COBOL language. Machine problems and exercises are used to reinforce the material presented in sequential assignments. COBOL is introduced using unit record equipment followed by disk input output. Prerequisite: BA 112, BA 214

### **BA 471 • 3 credits** **Real Estate**

A basic, but intensive course covering legal, financial, and managerial aspects of residential real estate. Areas of study include legal framework, types of ownership vehicles, financing, appraisal, income property management, cash flow, tax applications, and real estate licensing examination preparation.

### **BA 472 • 3 credits** **Insurance**

A course providing the necessary minimal insurance background for students contemplating a career in business. Specific insurance areas presented are: life, annuities, fire, homeowner, inland marine, workmens compensation, and general business liability.

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## Finance Courses

### **FI 312 • 3 credits** **Business Finance**

A study is made of the basic business and investment problems necessary for the successful operation of a business enterprise. Prerequisite: AC 102

### **FI 381 • 3 credits** **Money and Banking**

The nature and functions of money and commercial banking and their historical development in the United States.

### **FI 382 • 3 credits** **Budgeting and Profit Planning**

Detailed study of various types of budgets including coordination and administration of such programs; special budgeting and control techniques will be employed; emphasis will be given to the relationship of budget function to administrative and management aspects.

### **FI 392 • 3 credits** **Fiscal Policy**

Fiscal, debt management, and monetary policy; direct wage and price controls; economic stabilization as an objective of national policy.

### **FI 397 • 3 credits** **Business Cycles and Forecasting**

A study is made of the dynamic forces on economic activity. National income accounting and analysis, economic indicators and measures, forecasting for the economy of the firm, and problems of stability and growth are considered.

### **FI 398 • 3 credits** **Financial Institutions**

A detailed study of the operations of financial institutions and the interrelationships between their operations and economic activity.

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**FI 483 • 3 credits****Investment Analysis**

Method and techniques of determining investment merit of various types of securities are evaluated. Study of the place of bonds, preferred stocks and common stocks in various types of investment portfolios is made. The effect of the business cycle on investment policy will be examined and the importance of timing investment commitments will be stressed.

Prerequisite: FI 381, FI 312

**FI 484 • 3 credits****Federal Tax Accounting**

Detailed study of the Federal Income Tax Laws and Regulations, the Massachusetts State Income Tax Laws, Social Security Taxes, income tax problems and the preparation of income tax returns.

Prerequisite: FI 381

**FI 485 • 3 credits****Seminar**

A conference course for students doing research or preparing thesis related to the field of Finance.

Prerequisite: Available to seniors majoring in Finance

**FI 493 • 3 credits****Financial Management of Corporations**

This course is designed for advance work in the management of corporate funds. Selected topics from the various fields of financial activity with emphasis on trends, current problems and research are studied. The topics emphasized include capital expenditure policies, long-term and short-term financing problems, dividend policies, mergers and acquisitions, and trends in financial markets.

Prerequisite: FI 312, FI 483

**FI 494 • 3 credits****International Financial Management**

This course provides a basic understanding of the forces that affect the relative value of currencies in international markets, and discusses the major problems encountered by the firm in financing international operations.

Prerequisites: EC 231, & 232; FI 312

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**Industrial Relations Courses****IR 394 • 3 credits****Negotiations, Mediation and Arbitration of Collective Bargaining Agreements**

Student participation in case studies in resolving disputes and grievances in labor relations, including examination of the nature of collective bargaining practices and agreements and the arbitration process.

**IR 396 • 3 credits****History of Trade Unionism**

The history and current nature of organized labor; the structure, policies, and practices of modern labor unions.

**IR 421 • 3 credits****Labor Management**

This is a course dealing with the social background and present status of labor organizations. It emphasizes the many labor-management problems that are evident today and aims to help the student understand the various techniques employed in collective bargaining procedures.

**IR 422 • 3 credits****Personnel Management**

An exploration of that part of management devoted to a people-centered approach and its integration with overall goals of organization. Emphasis is placed on employment, compensation, and training and development of individuals.

**IR 462 • 3 credits****Manpower Resources**

A study on how to relate the human resources of organizations with the policies and practices of management. It emphasizes the need to motivate and develop people in the pursuit of organizational goals.

**IR 481 • 3 credits****Seminar**

A conference course for students doing research or developing a specialized interest related to the field of industrial relations. Frequent field trips and outside lecturers from business are involved.

Prerequisite: Restricted to Industrial Relations Majors or with consent of instructor.

**IR 482 • 3 credits****Seminar**

A continuation of IR 481. Prerequisite: IR 481.

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## Management Courses

### **MN 341 • 3 credits**

#### **Production Management**

The course acquaints the students with the basic principles and methods of production management and control as well as the qualitative and quantitative approaches to problem solving in the production management area.

### **MN 342 • 3 credits**

#### **Time and Motion Study**

The course acquaints the business student with the basic principles and approaches to methods engineering, work simplification, job enrichment, time study and their relationship to wage payment systems and the cost element.

### **MN 345 • 3 credits**

#### **Manufacturing Services**

Emphasis will be placed on industrial procurement, production and inventory control, and consideration of the role of the computer in these areas. Prerequisite: Upperclass standing; industrial experience; or a prior course in some type of industrial management.

### **MN 372 • 3 credits**

#### **Managerial Economics**

The course introduces the student to the use of the tools of economic analysis in formulating and solving management problems and effectively integrates economic analysis and the management viewpoint.

### **MN 373 • 3 credits**

#### **Human Relations in Business**

The course attempts to give the student a deeper insight into the need for understanding human characteristics as well as technological and economic concepts in building a sound management policy.

### **MN 395 • 3 credits**

#### **Managerial Psychology**

Managerial Psychology is designed to acquaint the student with the human problems within the supervisory and managerial levels of a business. Extensive emphasis is placed on the psychology of the manager and the managed.

### **MN 431 • 3 credits**

#### **Business Policy**

This course deals with upper-level management problems in business. It encompasses all basic business fields and gives the student an opportunity to develop managerial decision-making procedures and abilities. Prerequisite: Senior level standing

### **MN 432 • 3 credits**

#### **Administrative Practices**

The manager's administrative abilities and knowledge of his role as an administrator are often more important than technical knowledge and skills. Therefore, a wide range of administrative situations are examined through case and real-life studies.

### **MN 461 • 3 credits**

#### **Industrial Management**

Industrial activities, interrelationships and essential principles for their coordination are examined in order that the student may get an overview of the scope of responsibilities involved.

### **MN 462 • 3 credits**

#### **Management Policy**

This course gives special consideration to the policies of sales, procurement, personnel and finance. Problems involved in establishing responsibilities for the executive; plans of organization, facilities and techniques. Emphasis is placed on the case method of study.

### **MN 481 • 3 credits**

#### **Management Seminar**

Readings and discussion of important research and literature in student's particular field of interest, culminating in a major written paper. Prerequisite: Open to seniors in the Departments of Management, Accounting and Finance.

### **MN 483 • 3 credits**

#### **Small Business Seminar I**

Through a cooperative arrangement, student teams do actual business consulting for real companies. Prerequisite: Upper-class standing.

### **MN 484 • 3 credits**

#### **Small Business Seminar II**

Additional actual contact with real businesses, but in the role of consultant to other student teams. Prerequisite: MN 483

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## Marketing Courses

### **MK 321 • 3 credits**

#### **Principles of Marketing**

A basic understanding of the role and scope of responsibilities facing contemporary marketing management is the major objective of this course. Emphasis is placed on the integration of marketing principles into an organized approach for decision making.

### **MK 330 • 3 credits**

#### **Promotional Strategy**

Emphasis is placed on developing a basic understanding of the factors affecting promotional decisions as well as the role of promotional effort in market strategy planning. The basic principles of advertising, sales promotion and personal selling are integrated. Prerequisite: MK 321

### **MK 354 • 3 credits**

#### **Retail Management**

An examination of the basic concepts fundamental to understanding the retail environment and the operation of retail firms are covered.

### **MK 360 • 3 credits**

#### **Industrial Marketing**

A study of contemporary market strategy techniques in industrial companies. Emphasis is placed on the case approach where students are provided an opportunity to develop strategies in response to given market opportunities and competitive behavior. Prerequisite: MK 321

### **MK 410 • 3 credits**

#### **Consumer Behavior**

A study of consumer decision processes as a series of activities related to the purchase and consumption of goods. Emphasis is given to contemporary thought on the consumer problem-solving process, namely problem



recognition search evaluation  
commitment and post purchase  
behavior  
Prerequisite: Senior level  
standing

**MK 420 • 3 credits**  
**International Marketing**

A systematic treatment of marketing on a global scale. Emphasis is placed on the study of the dimensions of foreign market environments, marketing across national boundaries and the management of marketing programs simultaneously in two or more national environments  
Prerequisite: Senior level standing

**MK 422 • 3 credits**  
**Marketing Management**

This course is based on the management point of view, being decision-oriented and analytical. It sets forth a definite way of surveying current developments in marketing practice, with the advantage of allowing the student freedom via the case approach in his choice of executive action  
Prerequisite: MK 321 - Senior level standing in marketing

**MK 431 • 3 credits**  
**Advertising**

A detailed study is made of the principal form and applications of advertising alternatives as a part of overall market strategy planning. Considerable emphasis is also placed on applied problems which allow for student planning of advertising campaigns  
Prerequisite: MK 321

**MK 432 • 3 credits**  
**Sales Management**

Sales programs must be formulated and then implemented. In this age of accelerating product complexity, this course will deal with the sales manager who must understand the importance

of these major responsibilities  
Prerequisite: MK 321

**MK 440 • 3 credits**  
**Physical Distribution**

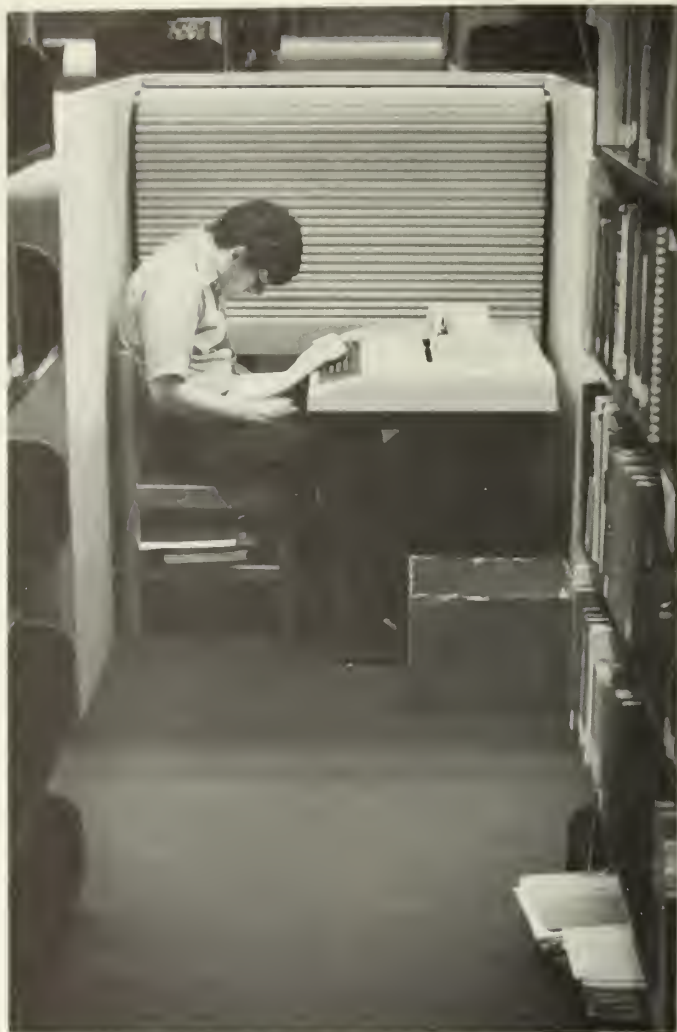
An examination of the management of marketing channel systems and subsystems, i.e., transportation, warehousing, inventory control, material handling, packaging, and location analysis. Contemporary thought on research techniques as applied to channel operations are reviewed

**MK 451 • 3 credits**  
**Marketing Research**

An examination of the market research process as used in approaching contemporary marketing problems. Emphasis is placed on the current status of research techniques and their application  
Prerequisite: MK 321 and MA 231

**MK 460 • 3 credits**  
**Social Issues in Marketing**

An examination and appraisal of contemporary thought on the extent to which marketing activities influence the ethical and social values of society  
Prerequisite: Senior level standing in Marketing



# Textile Sciences

## Faculty and Fields of Interest

**Clifford Beck** • microscopy

**Edward Cloutier** • knitting

**Edmund Dupre** • finishing and printing

**Kenneth Langley** • microscopy

**Stephen Petrie** • Textile chemistry

**Ronald S. Perry** (chairperson) • dyeing and finishing

**Frederick Ritz** • weaving

**William Silveira** • yarn processing

**Arthur Swaye** • design

**Alton Wilson** • design and testing

The future of the Textile Industry in the United States will depend significantly upon the quality of the technical and managerial leadership attracted to the industry. The technological, chemical and marketing advances of the industry in recent years have opened the door to many career opportunities.

Textiles also provide a unique opportunity for those who seek a lucrative profession. Today's modern textile industry has become a universe of diversification, where one can develop individual talent and specialize in aspects of manufacturing, chemistry, marketing, management, styling and design. Textiles have their application in every conceivable field of modern day living from the products we wear, to

industry, the environment, medicine, and to our explorations in space and the oceans.

It is very encouraging that industry and government continue to have tremendous need for those who are educated in textile technology and textile chemistry. The opportunities for the graduating student are unlimited and present a challenging, exciting, and very rewarding future. More than ever, the textile student must enter the field with a mission to excel, if the U. S. industry is to compete effectively in world markets. It is the aim of the curriculum at SMU to develop students with the desire to contribute to the industry's future.

## Textile Sciences Programs

The Textile Sciences Department offers two programs leading to the Bachelor of Science Degree: Textile Technology and Textile Chemistry.

Textile Technology majors have a choice of one of four minors when they enter the Junior year: Fabrication, Dyeing and Finishing, Business or Retailing and Merchandising.

The Fabrication Minor offers a more detailed study in the science of converting fibers into yarns and yarns into fabrics. The Dyeing and Finishing Minor not only provides a student with an excellent background in textile structures but also provides specialized instruction in the application of dyestuffs and chemical finishing agents such as permanent press, water repellents and fire-retardants. The Business Minor affords the student the opportunity to acquire

in-depth knowledge of subjects such as marketing, finance, or management. The Minor also better prepares the student for graduate study in Business Administration. The Retailing and Merchandising Minor is a unique program which not only prepares the student for positions in textile related fields, but also provides the student with career opportunities in retailing functions such as a department store buyer.

The Textile Chemistry program gives the student a comprehensive background in the field of chemistry with specialized instruction in textile chemistry.

Two graduate programs, one leading to the Master of Science Degree in Textile Sciences and the other in Textile Chemistry, are offered by the Textile Sciences Department. Details of these are listed in the Bulletin

of the Graduate School.

### Requirements

All Students in the Textile Sciences Department are required to take a minimum of 12 credits in the humanities and social sciences.

Courses in the humanities may be elected from the offerings of the departments of English, Modern Languages, Philosophy or in the College of Fine and Applied Arts (except studio and design courses, chorus or band courses). Courses satisfying the requirements in the social sciences can be taken in the departments of Economics, Accounting and Finance and Management, Political Science, Psychology and Sociology. Courses offered by the department of History can be chosen to satisfy either the humanities or the social sciences requirements.

## Textile Chemistry

The Textile Chemistry curriculum is designed to give the student a thorough preparation in basic chemistry in addition to specialized instruction in textile chem-

istry. Industry employs graduates in this field for positions in quality control, production, research and development, sales and purchasing

### Requirements

First Year			Semester Credits	First	Second
CH	151	152	Principles of Modern Chemistry	3	3
CH	165	166	Introduction to Experimentation	2	2
MA	111	112	Analytic Geometry and Calculus I and II	4	4
E	101	102	Freshman English	3	3
			Humanities or Social Science	3	3
				15	15
Second Year			Semester Credits	First	Second
CH	251	252	Organic Chemistry	3	3
CH	265	266	Organic Chemistry Laboratory	2	2
MA	211		Analytic Geometry and Calculus III	4	
MA	212		Differential Equations		3
PH	111	112	Physics I, II	3	3
PH	121	122	Physics Laboratory (biweekly)	1	1
			Literature	3	3
TC	326		Textile Chemistry		3
				16	18
Third Year			Semester Credits	First	Second
CH	305		Modern Methods of Chemical Analysis	3	
CH	307		Procedures of Chemical Analysis	1	
CH	315	316	Physical Chemistry I and II	4	4
CH	320		Computer Programming in Chemistry		3
TC	302		Elementary Dyeing	3	
TC	421		Chemical Technology of Finishing I		3
PH	211		Physics III	3	
PH	221		Physics Laboratory (biweekly)	1	
			Unspecified Textile Elective		3
				15	13
Fourth Year			Semester Credits	First	Second
TC	452		Textile Microbiology	3	
TC	401		Advanced Dyeing	3	
TT	431		Physical Testing		3
TT	462		Microscopy	3	
TC	411		Textile Printing		3
TC	422		Chemical Technology of Finishing II		3
TC	442		Chemistry of Fibers		3
TC	431		Industrial Chemical Analysis		3
			Humanities or Social Sciences	6	
Total	122 Credits			15	15



## Textile Technology

The technology program encompasses a wide range of textile subjects, including fibers, the conversion of fibers into yarns and fabrics, the application of color, performance testing, and quality control. The first two years are common for all technology majors, and at the end of the sophomore year the student selects one of the four minors for the Junior and Senior years of study.

## Requirements

First Year			Semester Credits: First Second	
E	101	102	Freshman English	3 3
MA	101	102	Mathematics	3 3
CH	101	102	General Chemistry	3 3
CH	103	104	General Chemistry Lab	1 1
TT	104		Textile Orientation	2
TT	201		Yarn Technology I	3
			Electives*	3
				15 16
Second Year			Semester Credits: First Second	
TT	202		Yarn Technology II	3
TC	302		Elementary Dyeing	3
TC	325		Textile Chemistry I	3
TT	211	212	Fabric Technology I II	3 3
TT	221		Fabric Design I	3
TT	231		Knitting Technology I	3
TC	421		Chemical Technology of Finishing I	3
TC	442		Chemistry of Fibers	3
BA	112		Introduction to Computer Technology	3
			Electives*	3
				15 18
Third Year			Semester Credits: First Second	
<b>Fabrication Minor</b>				
TT	222		Fabric Design II	3
TT	232		Knitting Technology II	3
TT	311		Fabric Technology III	3
PH	101	102	General Physics I II	3 3
PH	103	104	General Physics Lab I, II	1 1
TT	321		Fabric Structure	3
TT	431		Physical Testing	3
BA	350		Business Communications	3
			Electives*	3
				16 16

Fourth Year	<b>Fabrication Minor</b>	Semester Credits: First	Second
TT 301	Yarn Technology III	3	
TT 473	Non-Woven Fabric Structure	3	
TT 411 412	Statistical Methods and Quality Control	3	3
TT 481	Plant Engineering		3
	Electives*	6	9
Total 126 Credits		15	15

More advanced courses in Mathematics, Chemistry and Physics may be taken in lieu of those specified above.

\*The 30 elected credits are to be taken as follows:

12 credits in humanities and social sciences

6 credits in Textile Sciences

12 credits in free electives

Third Year	<b>Dyeing and Finishing Minor</b>	Semester Credits: First	Second
TT 322	Fabric Structure	3	
TT 462	Microscopy	3	
BA 350	Business Communications	3	
PH 101 102	General Physics I, II	3	3
PH 103 104	General Physics Lab I, II	1	1
TC 326	Textile Chemistry II		3
TC 411	Textile Printing		3
TT 431	Physical Testing		3
	Electives*	3	3
		16	16

Fourth Year	<b>Dyeing and Finishing Minor</b>	Semester Credits: First	Second
TC 401	Advanced Dyeing	3	
TT 473	Non-Woven Fabrics	3	
TT 411 412	Statistical Methods and Quality Control		3
TC 422	Chemical Technology of Finishing II		3
TT 481	Plant Engineering		3
	Electives*	6	6
Total 126 Credits		15	15

More advanced courses in Mathematics, Chemistry and Physics may be taken in lieu of those specified above.

\*The 27 credits are to be taken as follows:

12 credits in humanities and social sciences

9 credits in Textile Sciences

6 credits in free electives

Third Year	<b>Business Minor</b>	Semester Credits: First	Second
TT 232	Knitting Technology II	3	
PH 101 102	General Physics I, II	3	3
PH 103 104	General Physics Lab I, II	1	1
BA 350	Business Communication		3
TT 431	Physical Testing		3
	Electives*	9	6
		16	16

Fourth Year	Business Minor	Semester Credits: First	Second
TT 473	Non-Woven Fabrics	3	
TT 411 412	Statistical Methods and Quality Control	3	3
TT 481	Plant Engineering		3
	Electives*	9	9
Total 126 Credits		15	15

More advanced courses in Mathematics, Chemistry and Physics may be taken in lieu of those specified above.

\*The 42 elected credits are to be taken as follows:

18 credits in Accounting and Finance or Management  
 12 credits in Textile Sciences  
 12 credits in humanities and social sciences

Third Year	Retailing and Merchandising Minor	Semester Credits: First	Second
TT 232	Knitting Technology II	3	
TT 473	Non-Woven Fabrics	3	
PH 101 102	General Physics I and II	3	
PH 103 104	General Physics Lab I and II	1	1
TT 431	Physical Testing		3
BA 350	Business Communications		3
	Electives*	6	6
		16	16

Fourth Year	Retailing and Merchandising Minor	Semester Credits: First	Second
TT 462	Microscopy	3	
	Electives*	12	15
Total 126 credits		15	15

More advanced courses in Mathematics, Chemistry, and Physics may be taken in lieu of those specified above.

\*The 48 elected credits are to be taken as follows:

12 credits in Retailing and Merchandising  
 12 credits in specified Textile Sciences courses  
 12 credits in humanities and social sciences  
 12 credits in free electives

### Business Electives

The following is a listing of the approved Business Administration courses available; other courses available upon approval of the chairpersons of the Departments of Accounting and Finance and Management and the student's advisor.

Principles of Marketing  
 Production Management  
 Human Relations  
 Labor Management  
 Industrial Management  
 Economics I & II  
 Time and Motion Study  
 Managerial Economics  
 Principles of Finance  
 Money and Banking  
 Public Finance

Economics may also satisfy  
 Humanities and Social Sciences  
 requirements.

### Textile Sciences Electives

Elective courses may be selected from any of the Textile Chemistry or Textile Technology courses listed provided the prerequisites if any have been met. Courses specified for non-textile majors may not be taken.





## Textile Chemistry Courses

### TC 302 • 3 credits Elementary Dyeing

This course consists of a study of the preparation of textile fibers for dyeing and the application of the various classes of dyestuffs to textile fibers

### TC 303 • 3 credits The Art of Dyeing with Natural Dyes

The natural dyes used by our ancestors are discussed. Methods relating to the extraction and preparation of the dyes from woods, bark and insects are studied. Laboratory work consists of the preparation of the dyebaths and the actual application of the dyes to fabrics. Logwood, cochineal, madder, fustic, indigo, quercitron, osage orange and hypernic are some of the dyes utilized. Cannot be used to satisfy requirements for programs in the Textile Sciences Department.

### TC 325 • 3 credits Textile Chemistry I

This is an introductory course in the organic chemistry of textile fibers, polymers, dyestuffs, finishing chemicals and other organic chemicals used in the textile industry.

### TC 326 • 3 credits Textile Chemistry II

An introduction to the fundamental chemistry and principles of preparation, bleaching, dyeing, printing and finishing. All phases of textile wet processing will be covered in order to provide a basic understanding of these various phases of textiles.

### TC 401 • 3 credits Advanced Dyeing

Studies are conducted on the application of dyestuffs to synthetic fibers and mixed fiber combinations. Color matching and experimental dyeing on pilot

plant equipment are included.  
Prerequisite: TC 302

### TC 402 • 3 credits Advanced Dyeing

This course is a continuation of TC 401.  
Prerequisite: TC 401

### TC 411 • 3 credits Textile Printing

This course covers methods of printing and the preparation of printing pastes. Direct, discharge and resist printing methods are included.

### TC 421, 422 • 3 credits Chemical Technology of Finishing I, II

The application of the various classes of textile finishes to fabrics are studied. Attention is centered on the standard finishes used in modern practice.  
Prerequisite: TC 302

### TC 431 • 3 credits Industrial Chemical Analysis I

This course is devoted to the chemistry of products associated with the textile industry. Methods of analysis of the A. A. T. C. C. and A. S. T. M. and other specialized procedures are followed. The testing of dyestuffs and fabric blends is included.  
Prerequisite: TC 302

### TC 442 • 3 credits Chemistry of Fibers

The chemistry of natural and synthetic fibers. Studies are made concerning the relationship between the chemical structure and physical properties of fibers.  
Prerequisite: CH 212

### TC 452 • 3 credits Textile Microbiology

This course provides the fundamental techniques of microbiology. The preparation of culture media, staining and identifi-

cation, and sterilization techniques is included. The Application and evaluation of bactericidal and fungicidal finishes to textile materials are studied in detail.

Prerequisite: TC 421

**TC 485 • 3 or 6 credits**  
**Introduction to Research**

Textile Chemistry students accepted for study by a faculty research advisor will be assigned a topic for investigation. It is the aim of this course to introduce the student to research and develop his proficiency in the analysis, solution and presentation of his investigating work.

Prerequisite: Senior standing

**TC 500 • 10 credits**  
**Thesis**

An original research project related to the areas of chemistry, textile chemistry or dyeing is required. Approval of the completed project must be obtained from the director of the thesis, the departmental chairman and the director of graduate studies. Three typewritten copies of the thesis must be submitted in final form before the degree is awarded.

**TC 501 • 4 credits**  
**Chemistry of Dyestuffs**

This course deals with the chemistry and technology of dyestuffs. The raw materials, intermediates and finished dyestuffs are studied in detail. The effect of the construction on color and fastness properties is emphasized. Theoretical as well as practical and economic points of view are presented. The preparation of typical intermediates and dyestuffs is carried out in the laboratory.

**TC 502 • 3 credits**  
**Physical Chemistry of Dyeing**

This is a lecture course con-

cerned with the physiochemical theories of the application of dyestuffs to textile and related materials, including the thermodynamics and kinetic principles involved.

**TC 503 • 3 credits**  
**Physical Chemistry of Surface-Active Agents**

This lecture course is concerned with the physiochemical principles involved in surface-active agents. The chemical nature of the agents is studied and related to their properties. The technical uses are evaluated on this basis.

**TC 504 • 4 credits**  
**Textile Microbiology**

Original problems related to the application and evaluation of bactericidal and fungicidal finishes are investigated. Official test methods of the American Association of Textile Chemists and Colorists are studied and carried out in the laboratory. Culture maintenance and cultivation are included.

**TC 505 • 3 credits**  
**Processing of Synthetic Fibers**

This course is concerned with advanced dyeing and finishing methods for polyester, polyamide, acrylic, acetate and viscose fibers, separate and blended in combination with other fibers. Bleaching formulations, color matching and shade-fastness are studied.

**TC 506 • 3 credits**  
**Survey of Current Textiles**

Studies in this course include a survey of the fundamental reference works and literature of textile chemistry. Timely reports are required concerning recent advances in the manufacture, modification, dyeing and finishing of synthetics and blends.

**TC 507 • 3 credits**  
**Textile Microscopy and Photomicrography**

Instruction and problems in this course include the use of the optical microscope in relation to fiber identification and structure, composition of blends, physical, chemical, and biological condition of yarns and fabrics. Recording of data by photomicrography is included.

Prerequisite: TT 462

**TC 508 • 3 credits**  
**Textile Printing Advanced**

The more complex styles of printing, discharge and resist, are covered in detail. The preparation of white and colored print paste for all classes of dyed backgrounds is investigated. Attention is given in dyeing ground shades for discharge printing. Special effects such as Plisse, Burn-out and Vigoreaux styles are considered.

Prerequisite: TC 411

**TC 509 • 3 credits**  
**Chemical Technology of Finishing**

This course is more comprehensive than that given in the undergraduate course. Greater detail is provided concerning the mechanisms used in the application of specialized finishes and the chemical reactions involved.

**Combined Career Opportunities**

The Department of Textile Science is now offering to interested students Combined Career Opportunities, which are not reflected in the above programs. Students who are to major in Textile Technology may now minor in Business; minors in Fabrication and Dyeing and Finishing shall continue to be offered.

The Combined Career Oppor-

tunities have been designed to educate the individual with a thorough understanding of textile sciences coupled with sufficient credits in the chosen minor. To afford more flexible career choices for the student in the business minor, 18 to 27 credits can be earned. This unique opportunity to combine a Textiles Business Curriculum will provide the graduate with qualifications that most desirable for supervisory and administrative positions in textile and other industries. Students who choose the Business Minor who later seek an advanced degree will have the opportunity to matriculate in either the Textile or Business field.

**Business Minor**

The following is a listing of the Business courses available; other courses available upon approval of the Chairpersons and the student's advisor.

Introduction to Computer Technology

Principles of Marketing  
Production Management  
Human Relations  
Labor Management  
Industrial Management  
Economics I and II  
Time and Motion Study  
Managerial Economics  
Principles of Finance  
Money and Banking  
Public Finance

Economics may satisfy Humanities and Social Sciences requirements.

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## Textile Technology Courses

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### **TT 104 • 3 credits** **Textile Orientation**

This is a survey of the entire textile industry, designed to introduce the student to the subject and to outline the various career opportunities in the field. Lectures are supplemented with field trips and guest lecturers drawn from industry.

### **TT 105 • 3 credits** **Fundamentals of Textiles**

This course has been designed to broaden the student's understanding of textiles and afford the individual a workable knowledge as a consumer of textile products.

Emphasis is placed on the fundamentals of fibers, yarns, and fabrics, their properties, usage, quality aspects, and relationship to the finished product. The manufacturing processes are considered only to the degree necessary for the student to better compare and comprehend the textile products discussed. Federal legislation, as it pertains to textiles, will also be given emphasis in order to fulfill the aims of the course.

Prerequisite: None. It is open to all University students with exception of Textile Technology and Textile Design majors.

### **TT 201-202 • 3 credits** **Yarn Technology**

Consideration is given to a fundamental understanding of the cotton fiber, its growth, classification, and other essential material. The course then introduces the student to the theoretical and technological concepts of processing on the cotton system, with emphasis on the initial operations during the first semester.

A continuation into similar concepts employed during the remaining operations of yarn processing is emphasized during the second semester.

Historical basis for processing changes and modernization is also considered.

Prerequisites: For TT 201 - TT 101 or consent of instructor  
For TT 202 - TT 201

### **TT 211 • 3 credits** **Fabric Technology I**

This course consists of a study of the fundamentals and principles of materials preparation prior to weaving. The various methods and equipment involved in the winding, warping and slashing processes are discussed along with problems which may arise concerning the processes.

### **TT 212 • 3 credits** **Fabric Technology II**

This course is a continuation of TT 211 and involves the fundamentals and principles of the mechanisms related to the fabrication of materials by the process of weaving. Basic cam systems, dobby mechanism and semi-automatic motions are discussed and observed in operation.

Prerequisite: TT 211

### **TT 221 • 3 credits** **Fabric Design I**

A study is made of the fundamental principles of fabric construction and weave formation of basic and staple fabrics. Instruction is given in the physical analysis and design techniques essential to the reproduction and creation of woven fabrics.

### **TT 222 • 3 credits** **Fabric Design II**

A continuation of TT 221.

### **TT 225 • 2 credits** **Design and Structure I**

This is a course in the technical procedures which apply to weave formation and fabric construction including a survey of all significant terms pertaining to the area of study. For Textile Design students.

### **TT 226 • 2 credits** **Design and Structure II**

Continuation of TT 225.

### **TT 231 • 3 credits** **Knitting Technology I**

A basic study is made of the principles of mechanisms related to the fabrication of materials by the process of knitting. Machine and motion capabilities and applicable mathematics are studied. The analysis and creation of fabric designs and patterns are also considered.

### **TT 232 • 3 credits** **Knitting Technology II**

A continuation of TT 231.



**TT 301 • 3 credits**  
**Yarn Technology III**

Discussions on the stress-strain and recovery properties of fibers and their relation to processing and product characteristics. Blends, blend systems, and the processing of blend and 100% synthetic staple material into yarns is also emphasized. Other selected topics will also be considered.  
Prerequisites: TT 201 202  
TC 442

**TT 302 • 3 credits**  
**Yarn Technology IV**

Discussions on the theories and processing procedures for the manufacturing of such yarns as textured, stretch and high-bulk. Student presentation of assigned topics concerning trends and the latest developments in fibers, yarns, and processing. Written papers on appropriate topics will be assigned.  
Prerequisite: TT 301

**TT 311 • 3 credits**  
**Fabric Technology III**

Comprehensive studies are made of more complicated mechanisms related to various types of weaving equipment. The design, applicable calculations, capabilities, timing, and settings on the multiple mechanical devices are explored and studied.  
Prerequisite: TT 212

**TT 311 • 3 credits**  
**Fabric Technology III**  
A continuation of TT 311.

**TT 319 • 3 credits**  
**Synthetic Fiber Processes**

This course is concerned with the synthesis of polymeric materials and their extrusion into films and fibers. Manufacture of the major synthetic fibers, namely polyamide, polyester, acrylics and polypropylene is discussed

in depth. Newer fibers such as those derived from aromatic polyamides are also covered. This course also deals with the relative merits of the various fibers in terms of economics and performance.

**TT 321 • 3 credits**  
**Fabric Structure**

A continuation of TT 221-222. More complex fabric constructions and patterns are pursued including technology related to and required for the reproduction and creation of fabrics in the areas of multiple yarn system and three dimensional characteristics and properties. Associated yarn and fabric mathematics are also included.  
Prerequisite: TT 222

**TT 322 • 3 credits**  
**Fabric Structure**

This is a course for students in the Dyeing and Finishing Minor. It covers topics such as the construction of fabrics and theory of fabric properties influenced by dyeing and finishing techniques. An emphasis is placed upon the analysis of fabric defects and defect evaluation programs currently applied in the Industry.  
Prerequisite: TT 222

**TT 331 • 3 credits**  
**Textile Technology**

This is a course for Textile Design students covering the theory of procedures employed in the processing of raw materials into yarns including natural and manufactured types of fibers.

**TT 332 • 2 credits**  
**Textile Technology**

This is a course in the theory of material fabrication, covering principally the weaving process in its variations and capabilities as related to the application of fabric design. For students majoring in Textile Design.

**TT 341 • 3 credits**  
**Design and Structure III**

This is an extension of TT 225-226 covering more complex fabric patterns and constructions. It includes the analysis, reproduction, and creation of multiple-yarn, three-dimensional, and Jacquard type fabrics.  
For Textile Design students

**TT 342 • 3 credits**  
**Design and Structure IV**

A continuation of TT 341.  
Prerequisite: TT 341

**TT 405 • 3 credits**  
**Textile Merchandising and Marketing**

The lectures cover case histories and general discussions of the following subjects: the marketing of textile fibers; yarns; cloth; the influence of style and fashions on textile industry products; also price policies and other problems common to the textile industry. The course is based largely on the WORTH STREET RULES.

**TT 411-2 • 3 credits**  
**Statistical Methods and Quality Control**

A study of the statistical methods used in the textile industry to analyze test data, design experiments, improve control quality, and study process capability.

**TT 421 • 3 credits**  
**Design and Structure**

Design principles and techniques are applied to the reproduction and creation of Jacquard-type fabrics. This includes the development of the pattern sketch and painted design and the transfer of same for technical application in fabric formation. A study of novelty and textured yarns is included.  
Prerequisite: TT 321 or TT 322

**TT 431 • 3 credits**  
**Physical Testing**

The techniques and instruments used in quantitative and qualitative determination of fiber yarn and fabric physical properties are studied. Emphasis is placed on the theories underlying the determined properties as well as on the interpretation and evaluation of data obtained.

**TT 452 • 3 credits**  
**Quality Control**

Studies are made of industrial quality control by statistical methods as applied to manufacturing processes. The methods of data analysis, inspection methods, determination of sample size, and the construction of control charts are investigated.  
Prerequisite: TT 431

**TT 462 • 3 credits**  
**Microscopy**

Instruction is given in using the optical microscopy in relation to fiber identification and structure, composition of blends, physical, chemical, and biological condition of fibers and yarns. Students are taught the application of micrometers for length, diameter, and area measurements which is a prerequisite for recording of data by photo-micrography.

**TT 470 • 3 credits**  
**Advanced Knitting Technology**

This course consists of a study of knit fabrics made on Raschel and Warp knitting machines, together with the creation of new designs and the formation of many types of webbing by the utilization of various types of yarns. Charts are made of the sample to indicate the variances in fabric reactions from fine gauge knit lace to course webbings. Finishing requirements of these particular fabrics are studied.

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**TT 472 • 3 credits**  
**Fiber Technology**

The subject matter of this course covers the origin, history and physical properties of all fibers both natural and synthetic. In addition, the manufacture of and the use in textiles of the synthetic fiber is discussed in detail.

**TT 473 • 3 credits**  
**Non-Woven Fabric Technology**

This is a course for textile technologists involving the study of theories dealing with processing chemical, mechanical and chemical-mechanical non-woven fabrics. Emphasis will be placed upon machinery and fiber selection. Research as to progress in the area will also be considered.

**TT 481 • 3 credits**  
**Plant Engineering**

General consideration is given to the design of a new textile mill multi-story vs. single-story, problems in construction, slow-burning vs. fire-proof, windowless construction, flow diagrams, requisite applied engineering mathematics will be intensively pursued.

**TT 482 • 3 credits**  
**Fabric Research Development and Design**

This course correlates properties of textile materials, engineering principles in textile processing and the design of fabric structures with the desired properties for a particular functional use which would relate to stress-strain, dimensional stability, and other characteristics pertaining to the behavior of the finished product.

**TT 485 • 3 or 6 credits**  
**Introduction to Research**

Students accepted for study by a faculty research advisor shall be assigned a topic for investi-

gation. It is the aim of this course to introduce the student to research and develop his proficiency in the solution, analysis, and presentation of his investigating work. A maximum of 6 credits can be obtained.  
Prerequisite: Senior standing

**TT 486 • 3 or 6 credits**  
**Introduction to Research**  
A continuation of TT 485

**TT 492 • 3 credits**  
**Textile Cost Accounting**

This course analyzes the principles and problems basic to textile costing, basic cost concepts, cost problems, materials, labor and manufacturing costs; textile fiber and supplies purchasing, spinning mill costs; weaving mill costs, finishing mill cost problems; textile marketing costs, financial statements.

**TT 500 • 8 credits**  
**Thesis**

The thesis requirement may be fulfilled in the textile sciences or may be of an interdisciplinary nature. In the latter instance, however, the emphasis must be on some aspect of textile science.

It is expected that those students with an appropriate undergraduate degree in textiles, will undertake a thesis project which will demonstrate ability and proficiency in the solution, analysis, and presentation of an original research topic.

Students with an undergraduate specialty in an area other than textiles have the opportunity to couple this knowledge with textiles in either a scientific, theoretical or a more applied project approach to fulfilling the thesis requirement.

Thesis will be conducted under

the supervision of a faculty advisor. An oral examination, in defense of the thesis, will be required.

Prerequisite: advanced graduate standing

**TT 503 • 1 credit**  
**Research Techniques**

A course designed to aid the student in better understanding research approach and techniques. To develop an insight as to the evaluation of research results. A proposal on an original research topic must be submitted and approved.

Prerequisite: advanced graduate standing

**TT 504 • 3 credits**  
**Graduate Seminar**

Student discussions on selected topics will be carried out under the supervision of a faculty member. Written papers to be submitted on those topics assigned.  
Prerequisite: graduate standing

**TT 506 • 3 credits**  
**Independent Study**

Individual study under the supervision of a faculty member in an area of textiles not otherwise a part of the course offerings. Students shall be held responsible for meeting the requirements of independent study as outlined in an approved proposal.  
Prerequisite: graduate standing

**TT 508 • 3 credits**  
**Design and Analysis of Experiments**

A study of the statistical methods and systems employed in the design of experiments, the testing of materials, and the evaluation of test data.

Prerequisite: TT 411-412





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The work of the engineer undergoes continual change. New scientific discoveries and the development of new technologies require that engineering curricula be under continuous evaluation and revision. The College of Engineering, recognizing this need for continual program revision, has devised curricula which have a broad fundamental component which develops the basic science and

mathematics knowledge and skills, and a departmental component that is devoted to the application of the basic concepts to current engineering practice. Through selection of technical electives, the student may concentrate on one or more of the various aspects of engineering practice such as research, design, construction, production, etc. The College of Engineering is confident that it has developed

a rational balance in the components of its curricula and has also provided a broad range of educational opportunities within a limited number of curricula

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### **Requirements for the Bachelor of Science Degree**

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#### **Freshman English**

All first year students in the college are required to take Freshman English (E 101, 102), a two-semester course in the basic skills of communication, written and spoken

#### **Humanities/Social Science**

All students in the College are required to take a minimum of 18 credits in the humanities and social sciences. Of these, a minimum of two related courses in both a humanity and a social science must be chosen.

Courses in the humanities may be elected from the offerings of the departments of English, Foreign Languages and Literature (except introductory and intermediate language courses), and Philosophy in the College of Arts and Sciences. Courses offered by other colleges may be taken with the approval of the student's department.

Courses satisfying the requirements in the social sciences can be taken in the Departments of Economics, Political Science, Psychology and Sociology

Courses offered by the Department of History can be chosen to satisfy either the humanities or the social sciences requirements.

Courses offered by the Education Department, the College of Business and Industry or by the College of Nursing are not acceptable as satisfying the

humanities and social science requirements, except by special permission of the student's Department Chairman and the Dean of the College of Engineering. Such permission will only be granted if the student presents a definitive program encompassing a number of related courses in a discipline outside of engineering that is designed to satisfy a particular career plan.

A program of Contract Learning is also available in the College of Engineering, allowing a senior or junior student to earn up to 6 credits with the approval of the student's department.

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## Engineering Courses for All SMU Students

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The following courses are offered by the College of Engineering as interdisciplinary courses or as courses to satisfy distribution and science requirements.

### **CE 100 • 3 credits**

#### **The Technical Nature of Man's Environment**

A combination of three separate five week mini-courses, primarily for non-engineers, designed to develop an understanding of the technical nature of man's structures; his transportation systems; and his environmental systems.

3 hrs. lecture

### **CE 101 • 3 credits**

#### **Man - Structural and Environmental Problems**

This is the first course in the two-course sequence offered by the Civil Engineering Department in a combination of two separate seven week mini-courses, primarily for non-engineers, designed to develop an understanding of the technical nature of man's structural problems and his environmental problems.

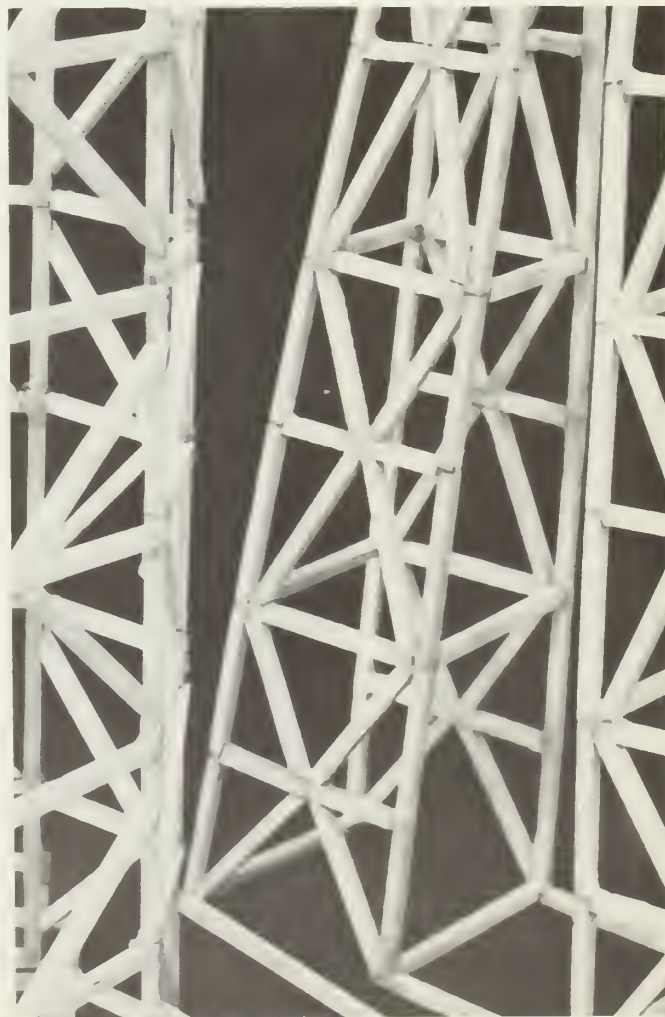
3 hrs. lecture

### **CE 102 • 3 credits**

#### **Man - Transportation and Construction Problems**

This is a second course in the two-course sequence offered by the Civil Engineering Department in combination of two separate seven week mini-courses, primarily for non-engineers designed to develop an understanding of the technical nature of man's transportation, its construction techniques and problems including surveying techniques.

3 hrs. lecture



**CE 300 • 3 credits****Pollution Control Methodology**

The course covers the characterization and treatment of gaseous, liquid, and solid pollutants, and the effects of such pollutants on the environment. The physical, chemical, and biological operations and processes utilized to treat wastes are discussed. Ecological effects of waste discharge into the atmosphere and water courses are analyzed. Course also includes lab sessions and field trip.

3 hrs. lecture

(For Science major only)

**CE 305 • 3 credits****Earth and Marine Geology**

A study of the processes and mechanisms that act on and within the earth, the agents and forces that cause change and the consequences of that change. The relationship of geological phenomena to the field of civil engineering is emphasized. The important aspects of marine geology are also discussed.

3 hrs. lecture

**CE 309 • 3 credits****Introduction to Transportation**

The course presents all pertinent characteristics of transportation in a comprehensive overview. The mobility mind of man, their measurement and planning utility are discussed. A human decision model is developed, the physical constraints on transportation systems are developed, and then compared to the existing transportation system. A discussion of critical economic principles leads to concepts of planning.

3 hrs. lecture

**I 401 • 3 credits****Technological Society  
Year 2000 Analysis**

Interdisciplinary study of several technologies (transportation, education, energy, etc.) and of their impact upon the individual and society today and tomorrow. Evaluation of current technological status, its trend, individual valuations of its possible changes. Design of desirable technologies and how to achieve them.

3 hours lecture

**I 412 • 3 credits****Technological Society  
Year 2000 Synthesis**

Interdisciplinary study of several technologies (transportation, education, energy, etc.) and of their impact upon the individual and society today and tomorrow. Evaluation of current technological status, its trend, individual valuations of its possible changes. Design of desirable technologies and how to achieve them.

3 hrs. lecture

**I 403 • 3 credits****World Geology**

World Geology is a first course in geological science presenting concepts based upon the recent discoveries that opened up new approaches to age-old mysteries and is now the plate tectonics, continental drift and spreading sea floor theories of the "new" geology. The study of the ocean, the sea floor and coastlines plays an important part in the course. The nature and properties of the materials composing the earth, their distribution and the processes by which they are formed, altered, transported and distorted are covered.

3 hrs. lecture

**CS 261 • 3 credits****Principles of Computer  
Programming**

A course designed to give the student familiarity with digital computer methods and programming with emphasis on Fortran.

3 hrs. lecture

**CS 262 • 3 credits****Introductory Computer  
Science**

History and uses of computers. Addressing structures and stack operations. Representation of information and basic memories. Prerequisite: CS 261 or Fortran Programming.

**ET 314 • 3 credits****Digital Logic and Design**

An introduction to digital techniques from a functional point of view. This course provides the basics of binary arithmetic, logic functions and design with digital devices. Material covered includes quantization, binary numbers and codes, Boolean algebra, digital circuit elements, and digital Algorithms.

Lecture 3 hours

Prerequisite: College level

Algebra

**ME 200 • 3 credits****Order and Chaos**

This course features a treatment of the laws governing energy transfer. The approach is one which requires an absolute minimum of mathematics in order to appeal to non-science and non-technical students. The various activities of the course include lectures, discussion sessions, selected readings, field trips to power plants, and films. Topics covered include: A history of the developments and personalities related to energy; balancing energy accounts (i.e. the First Law of thermodynamics);

man as an energy converter (i.e. the First Law applied to human systems); time's arrow (i.e. the Second Law of thermodynamics); energy, entropy, demons, poetry, culture and life. Students majoring in Engineering or Engineering Technology may take this course as a Free Elective.

Lecture 3 hours.

Prerequisite: Sophomore standing or above.



## Division of Engineering

Every student seeking the degree of Bachelor of Science in Engineering is required to take a common core program which is offered essentially in the first three semesters of study. This core program provides the student with a solid foundation in mathematics and the basic chemical, physical, and engineering sciences. The student then has a choice of five Bachelor of Science degree programs.

In the traditional programs in Civil, Electrical and Mechanical Engineering, the student is prepared for a career in industry or government or for continuing education at the graduate level. The curricula for these programs beyond the core are prescribed by the individual departments.

Those students who want to pursue a career in basic or applied research may elect the program in Engineering and Applied Sciences. This program offers a broad base in mathematics, science and engineering, and is designed primarily for those students who intend to continue their education at the graduate level. The details of this program are prepared by the student in consultation with the academic advisor to meet the student's particular needs and interests. In addition, the approval of the Curriculum Committee of the College of Engineering is required.

The Division of Engineering also offers a Bachelor of Science Degree program in General Engineering with a minor in an area outside of engineering for those students who wish to fashion an interdisciplinary curriculum to meet their own particular career plans. Students in this program will be required to take the core program with some additional upperclass courses offered by the College. The courses neces-

sary to satisfy the minor requirements may be taken in the College of Arts and Sciences or of Business and Industry. The detailed program is prepared by the student in consultation with the academic advisor and must receive the approval of the Curricular Committee of the College.

The various curricula in the Division of Engineering specify a number of elective courses. Elective courses fall into two categories: technical electives and free electives. Each student is allowed to select 6 credits as free electives chosen from the course offerings of any College at SMU, provided concepts which are new to the student form a substantial part of the course.

The technical electives are usually chosen from the courses offered in the student's major department. Courses in the areas of mathematics, science or other engineering departments may also qualify as technical electives subject to approval by the student's major department. The student, in consultation with the faculty advisor, is expected to develop a definitive program which meets the student's desires and is approved by the department chairman. The proper choice of the technical electives allows the student to prepare for his future professional activity, whether it be to take a position in industry, continue in engineering or science graduate studies or in a field other than science or engineering.

## Engineering Core Program

First Year				Semester Credits: First      Second	
E	101	102	Freshman English I, II	3	3
CH	151	152	Principles of Modern Chemistry I, II	3	3
MA	111	112	Analytic Geometry and Calculus I, II	4	4
EN	151	152	Engineering Mechanics I, II	4	4
EN	161		Engineering Design Graphics*	3	
CS	261		Principles of Computer Programming*		3
				17	17
Second Year				Semester Credits: First      Second	
EN	201		Elements of Electrical Engineering I	3	
EN	251		Principles of Measurements	1	
EN	231		Materials Science	3	
EN	221		Materials Science Laboratory	1/2	
MA	212		Differential Equations	3	
PH	211		Physics III (Electricity & Magnetism)	3	
PH	221		Physics III Laboratory	1	
			Humanities/Social Science Elective	3	
				17 1/2 credits	

\*Both EN 161 and CS 261 are offered each semester. Roughly half of the freshman class will enroll in each.

## Engineering Core Courses

### EN 151 • 4 credits

#### Engineering Mechanics I

The first course in engineering mechanics, primarily a course in statics, has two major objectives. First, to introduce the student to the science of engineering mechanics and second to introduce the student to the art of applying science to the solution of engineering problems. The specific vehicle or curriculum to accomplish these objectives will be a study of the statics of rigid bodies. Topics covered in the course include: Statics of Particles, Friction; Systems of Forces, Equilibrium of Rigid Bodies; An introduction to Vector Algebra is also included.

4 hrs. lecture

Corequisite: MA 111

### EN 152 • 4 credits

#### Engineering Mechanics II

The study of Newtonian mechanics initiated in EN 151 is continued. This course deals with motions of particles subjected to the action of forces. Several principles are derived from Newton's Laws of motion and are applied to various engineering problems. The student is expected to master several new concepts, associated with Newton's Laws and to develop an analytical ability in problem solving. Methods learned in EN 151 will be used and extended to systems in motion. Specific topics covered in the course include: dimensional homogeneity of equations; kinematics of a particle; kinetics of a particle; conservation laws; principles of work-energy and of impulse-momentum; systems of particles; introduction to the kinematics of rigid bodies.

4 hrs. lecture

Prerequisite: EN 151, MA 111; MA 112 concurrently.

### EN 161 • 3 credits

#### Engineering Design Graphics

This introductory course has a threefold objective: (1) to develop an awareness of the history and current status of the profession of engineering; (2) to impart the concepts associated with the design process, including the enhancement of creativity; (3) to develop graphic skills for the communication of ideas from the designer to the fabricator.

2 hrs. lecture; 3 laboratory hrs.

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**EN 201 • 3 credits**  
**Elements of Electrical Engineering I**

This course introduces the student to the basic theory and techniques of circuit analysis and electromechanical energy conversion. Topics include AC and DC circuits, magnetic circuits and the natural response of electrical and mechanical elements. Electric motors and generators are also discussed and analyzed.

3 hrs. lecture

Prerequisite: MA 112

**EN 221 • ½ credit**  
**Materials Science Laboratory**

The students study the properties of materials in a series of experiments designed to supplement the course material in Materials Science (EN 231)

3 hrs. laboratory

EN 231 must be taken concurrently

**EN 231 • 3 credits**  
**Materials Science**

A fundamental treatment of engineering materials. Properties are discussed on the basis of material structure. Metallic, organic and ceramic materials are compared and applications are presented. Phases and phase relationships in binary systems are introduced. Solid state reactions and modifications of properties through changes in micro-structure are studied. Stability of materials in service environments is analyzed on the basis of material structure.

3 hrs. lecture, recitation 1 hour (optional)

Prerequisite: CH 152

**EN 232 • 3 credits**  
**Engineering Thermodynamics I**

The fundamental concepts and basic principles of classical thermodynamics are established. The Zeroth, First and Second

laws of thermodynamics are formulated with recourse to empirical observations and then expressed in precise mathematical language. These laws are applied to a wide range of engineering problems. The properties of pure substances are described using equations of state and surfaces of state. Reversible processes in gases are analyzed by means of the First and Second laws. A representative sampling of engineering applications is discussed and analyzed.

3 hrs. lecture, recitation 1 hour (optional)

Prerequisite: CH 152, MA 211 concurrently.

**EN 251 • 1 credit**  
**Principles of Measurements**

This course provides an introduction to those thought processes that are fundamental to experimental work in all areas of engineering. Topics include the purpose and mechanics of measurements as well as the organization and reporting of data. Also discussed is the statistical analysis of data and the evaluation of measurement errors.

Lecture / Laboratory 2 hrs.

**EN 301 • 3 credits**  
**Applied Engineering Mathematics**

A review of complex numbers precedes the introduction to functions of a complex variable and the following topics are discussed: Cauchy-Riemann equations, Cauchy's theorems, series expansions and residues and Bromwich contours. The inverse Laplace transform is presented. Vector algebra is reviewed and the foundations of vector calculus including the gradient, the divergence and the curl are presented with application to physical

problems. Various vector applied to maxima and minima problems and Lagrange multipliers and the elements of the calculus of variations are presented. Examples deal with Hamilton's principle and the Brachistochrone problems. After a review of determinants, the theory of matrix algebra is presented with emphasis on the solution of linear algebraic equations and eigenvalue problems. Techniques relating to numerical solution of complex systems are presented.

3 hrs. lecture

Prerequisite: MA 211



# Civil Engineering

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## Faculty and Fields of Interest

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**Siegfried M. Breuning** • transportation, interdisciplinary studies

**Allan L. Campbell** • civil engineering

**Thomas P. Jackivicz** • environmental specialty

**Madhusudan Jhaveri** • soils structures

**Sat Dev Khanna** (chairperson) • hydraulics, hydrology, hydrogeology sanitary, environmental impact statement

**Frederick M. Law** • structural engineering

**Walter J. McCarthy** • construction engineering

**Joseph O. Elmer** - soils-construction

**George Thomas** • surveying

Civil Engineering is the engineering of constructed facilities, of bridges and buildings and tunnels and dams of harbors and airports, of waterways and railways and highways, of water power and irrigation and drainage and water supply; of sewage and waste disposal and environmental health systems. Civil Engineers are the professionals who plan, design and construct these facilities.

The academic preparation for a profession which is so varied requires considerable breadth as well as depth. The Civil Engineering curriculum at SMU is

designed to provide this breadth and depth first by preparing the student with a thorough grounding in mathematics, the basic sciences and the engineering sciences; next by providing a broad background in the basic Civil Engineering specialties; and finally, by offering the student the opportunity to gain some depth of understanding in the specialty of his choice by means of a sequence of electives in Environmental Engineering, Structural Engineering, Transportation Engineering and Ocean Engineering. To better prepare the student to take his place as a citizen as well as a professional, the cur-

riculum is also designed to include a number of courses in the humanities and social sciences.

Early association with the Civil Engineering profession is encouraged by providing opportunities for the student to participate in field trips to facilities under construction and to participate in activities of the Student Chapter of the American Society of Civil Engineers.

The Civil Engineering Department is nationally accredited by the Engineering Council for Professional Development (ECPD).



## Requirements

First Year			Semester Credits: First	Second	
E	101	102	Freshman English I, II	3	3
CH	151	152	Principles of Modern Chemistry I, II	3	3
MA	111	112	Analytic Geometry and Calculus I, II	4	4
EN	151	152	Engineering Mechanics I, II	4	4
EN	161		Engineering Design Graphics		3*
CS	261		Principles of Computer Programming	3*	
			17	17	
Second Year			Semester Credits: First	Second	
EN	201		Elements of Electrical Engineering I	3	
EN	251		Principles of Measurements	1	
EN	231		Material Science	3	
EN	221		Material Science Lab	1/2	
MA	212		Differential Equations	3	
PH	211		Physics III (Electricity and Magnetism)	3	
PH	221		Physics III Lab	1	
			Humanities/Social Science Electives	3	3
MA	221		Calculus III		4
EN	232		Engineering Thermodynamics I		3
PH	232		Radiation and Waves		3
PH	242		Radiation and Waves Lab		1
CE	302		Mechanics of Materials		3
CE	312		Mechanics of Materials Lab		1/2
			17 1/2	17 1/2	
Third Year			Semester Credits: First	Second	
CE	201		Surveying	3	
CE	211		Surveying Laboratory	1	
CE	303		Fluid Mechanics	3	
CE	313		Fluid Mechanics Lab	1	
CE	307		Structural Theory	3	
CE	309		Introduction to Transportation	3	
CE	304		Sanitary and Environmental Engineering		3
CE	314		Sanitary and Environmental Engineering Lab		1
CE	308		Structural Engineering		3
			Technical Electives		6
			Humanities/Social Science Electives	3	3
			17	16	
Fourth Year			Semester Credits: First	Second	
CE	403		Soil Mechanics	3	
CE	413		Soil Mechanics Lab	1	
CE	402		Engineering Economy		3
			Technical Electives	6	6
			Free Electives	3	3
			Humanities/Social Science Electives	3	3
			16	15	
Total Credits - 133					

\*Both EN 161 and CS 261 are offered each semester. Roughly half of freshman class will enroll in each

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#### Technical Electives

CE 305	Earth and Marine Geology
CE 311	Hydraulics Engineering
CE 321	Structural Analysis
CE 331	Transportation Planning
CE 411	Water Quality Engineering
CE 412	Pollution Control of Wastes
CE 414	Environmental Analysis
CE 421	Matrix Methods of Structural Analysis
CE 422	Design of Structural Systems
CE 423	Design of Foundations and Earth Structures
CE 431	Highway Engineering
CE 434	Traffic Engineering
CE 443	Advanced Hydraulics
CE 491	Civil Engineering Project
CE 495	Introduction to Construction Engineering

Note: Additional technical electives offered in other departments are available to C. E. students with the prior approval from C. E. Department Chairperson.

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#### Free Electives

CE 100	The Technical Nature of Man's Environment
CE 101	Man — Transportation and Environmental Problems
CE 102	Man — Structures and Construction Problems
CE 300	Pollution Control Methodology
CE 493	Aesthetics — Man's Structures
I 401	Technological Society Year 2000 (Analysis)
I 412	Technological Society Year 2000 (Synthesis)

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#### Civil Engineering Courses

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##### **CE 100 • 3 credits**

##### **The Technical Nature of Man's Environment**

A combination of three separate five week mini-courses, primarily for non-engineers, designed to develop an understanding of the technical nature of man's structures, his transportation systems; and his environmental systems.  
3 hrs. lecture

##### **CE 201 • 3 credits**

##### **Surveying**

A study of the theory and practice of plane surveying as applied to property topographic and engineering surveys including curves, error theory and earthwork as related to civil engineering projects.  
3 hrs. lecture

##### **CE 211 • 3 credits**

##### **Surveying Laboratory**

Consists of field practice to understand and supplement the CE 201 course contents.  
3 hrs. laboratory

##### **CE 302 • 3 credits**

##### **Mechanics of Materials**

The behavior of materials and members under axial load, torsion, flexure, shear and combined loads is studied including the deflection of beams and buckling of columns. The relationship between stress and strain, principal stresses and strains and yield and fracture criteria are discussed.  
3 hrs. lecture  
Prerequisite: EN 151

##### **CE 303 • 3 credits**

##### **Fluid Mechanics**

The course encompasses the basic concepts in the mechanics

of fluids, fluid properties, fluid statics, kinematics and dynamics of flow. Dimensional analysis, metering, laminar and turbulent flows will also be discussed. Emphasis is placed on applications to closed conduit and open channel flow problems. Boundary layer concepts and drag and lift forces on submerged bodies are also considered.  
3 hrs. lecture  
Prerequisite: EN 152

##### **CE 304 • 3 credits**

##### **Sanitary and Environmental Engineering**

This is an introductory course to the sanitary engineering field. The environmental problems of urbanization and the natural cycle of water are discussed. Elementary hydrology, physical, chemical and biological principles of the treatment of water, sewage and industrial wastes are



covered. Municipal services—water mains, sanitary sewers and storm water drainage, layout and operation of purification and treatment works are dealt with in detail. In addition, state and federal regulatory standards are introduced and discussed. 3 hrs. lecture  
Prerequisite: CE 303, CH 152.

### **CE 305 • 3 credits**

#### **Earth and Marine Geology**

A study of the processes and mechanisms that act on and within the earth, the agents and forces that cause change and the consequences of that change. The relationship of geological phenomena to the field of civil engineering is emphasized. The important civil engineering aspects of marine geology are also discussed. 3 hrs. lecture

### **CE 307 • 3 credits**

#### **Structural Theory**

The methods of structural analysis and design of reinforced concrete beams, columns, frames, and one-and two-way slabs using both the elastic and ultimate strength theories are formulated and discussed. Emphasis is placed on giving the student an understanding of the general behavior of statically indeterminate structures as well as the specific behavior of reinforced concrete members. 3 hrs. lecture  
Prerequisite: CE 302

### **CE 308 • 3 credits**

#### **Structural Engineering**

The field of structural engineering is introduced through a study of the methods of structural analysis and design of steel structures based on both the elastic and plastic theories. Emphasis is placed on giving the student an understanding of the general behavior of all structures as well

as the specific behavior of structural steel members. 3 hrs. lecture  
Prerequisite: CE 307

### **CE 309 • 3 credits**

#### **Introduction to Transportation**

The course presents all pertinent characteristics of transportation in a comprehensive overview. The mobility needs of man, their measurement and planning utility are discussed. A human decision model is developed, the physical constraints on transportation are described; human, technological and economic criteria for transportation systems are developed, and then compared to the existing transportation systems. A discussion of crucial economic principles leads to concepts of planning. 3 hrs. lecture  
Prerequisite: CS 261

### **CE 311 • 3 credits**

#### **Hydraulic Engineering**

Hydraulic Engineering topics such as hydrology reservoirs, open channels, pipe grids, energy dissipators and pumps are studied. The function and design of hydraulic structures such as dams and spillways are also considered. 3 hrs. lecture  
Prerequisite: CE 303

### **CE 312 • ½ credit**

#### **Mechanics of Materials Laboratory**

A series of laboratory experiments are conducted to investigate the physical characteristics of materials and to verify the assumptions made in the course Mechanics of Materials (CE 302) or Strength of Materials (CT 311). Prerequisite: CE 302 (concurrent)

### **CE 313 • 1 credit**

#### **Fluid Mechanics Laboratory**

A series of laboratory experi-

ments aimed at supplementing the theory course CE 303 Fluid Mechanics with the objective of initiating the student into the field of fluid observations and experimentation. 3 hrs. laboratory  
Prerequisite: E 303 (concurrent).

### **CE 314 • 1 credit**

#### **Sanitary and Environmental Engineering Laboratory**

A series of laboratory experiments aimed at supplementing the theory course CE 304 by actual lab experiments in testing of water and wastes. 3 hrs. laboratory  
Prerequisite: CE 304 (concurrent)

### **CE 321 • 3 credits**

#### **Structural Analysis**

The structural analysis of statically indeterminate structures is studied. Using the methods of determining deflections developed in Structural Theory, the superposition methods are considered next with the latter method used as an introduction to matrix methods of structural analysis. 3 hrs. lecture  
Prerequisite: CE 307

### **CE 331 • 3 credits**

#### **Transportation Planning**

Fundamentals of urban, metropolitan, and regional development with attention to environmental, economic, and social influences in planning. Planning of facilities of all modes of transportation with emphasis on land use. 3 hrs. lecture  
Prerequisite: CE 309

### **CE 402 • 3 credits**

#### **Engineering Economy**

A study of the principles involved in the analysis of proposed investment in capital assets for decision making. Emphasis is

placed on techniques for economic studies of multiple alternatives, uncertainties in forecasts, increment costs, retirement and replacement. Enrollment is normally limited to engineering seniors. 3 hrs. lecture  
Prerequisite: MA 112 or MA 106

### **CE 403 • 3 credits**

#### **Soil Mechanics**

A study of the physical and mechanical properties of soil types including weight, volume relationship, permeability and drainage characteristics, effective stresses, and soil sampling are also discussed in detail. 3 hrs. lecture  
Prerequisite: CE 302 and CE 303.

### **CE 411 • 3 credits**

#### **Water Quality Engineering**

The design of source of supply of water and the distribution systems for water are studied. Chemical, physical and biological processes related to water are emphasized. State and federal purity of water criteria and codes are discussed. 3 hrs. lecture  
Prerequisite: CE 304

### **CE 412 • 3 credits**

#### **Pollution Control of Wastes**

The nature and causes of solid, liquid and gaseous pollutants and the biological, chemical, and physical characteristics of these wastes are discussed. The analysis, treatment, and disposal of domestic, municipal, and industrial wastes are studied. Survey methods as well as the rationale of control legislation are also discussed. 3 hrs. lecture  
Prerequisite: CE 304

### **CE 413 • 1 credit**

#### **Soil Mechanics Laboratory**

A series of laboratory experi-

ments conducted to supplement the theory course CE 403 by actual experiments in testing of various types of soils.  
3 hrs. laboratory

**CE 414 • 3 credits**  
**Environmental Analysis**

The course covers the characterization of water, monitoring techniques, analysis of wastewater operations, processes, and their modification, aerobic and anaerobic treatability studies, modeling of effluent disposal into rivers, estuaries, and oceans, and advanced instrumentation on this lecture.  
3 hrs. laboratory  
Prerequisite: CE 304 or equivalent

**CE 421 • 3 credits**  
**Matrix Methods of Structural Analysis**

The stiffness matrix and flexibility matrix methods of structural analysis are formulated in terms of elementary concepts of structural theory. The analysis of plane trusses, plane frames, space trusses, space frames, and structural grids using these methods are discussed. Emphasis is placed on the use of the digital computer as a computational tool.  
3 hrs. lecture  
Prerequisite: CE 307

**CE 422 • 3 credits**  
**Design of Structural Systems**

The design of several types of two and three dimensional load carrying structural systems are studied including alternate building systems of combinations of structural steel and reinforced concrete. The selection of the optimum system for a particular type structure is considered.  
3 hrs. lecture  
Prerequisite: CE 308

**CE 423 • 3 credits**  
**Design of Foundations and Earth Structures**

The design of retaining walls, spread, strap, and combined footings, mat and pile foundations, caissons are studied. The design of cofferdams and high embankments are discussed. Emphasis is placed on considerations of bearing capacity, settlement, drainage, and waterproofing.  
3 hrs. lecture  
Prerequisite: CE 403

**CE 431 • 3 credits**  
**Highway Engineering**

A study of the fundamental principles underlying the basic divisions of highway engineering: engineering design and construction practices, highway planning, economy, and finance, highway drainage, soils, bases, and pavements.  
3 hrs. lecture  
Prerequisite: CE 309

**CE 433 • 3 credits**  
**Transportation Planning**

Fundamentals of urban, metropolitan, and regional development with attention to environmental, economic and social influences in planning. Planning of facilities for all modes of transportation with emphasis on land use.  
3 hrs. lecture  
Prerequisite: CE 309

**CE 434 • 3 credits**  
**Traffic Engineering**

This course introduces the engineering student to the concepts of traffic control. The course begins with a discussion and quantitative appraisal of the characteristics of the components of the transportation systems: the transport user, the vehicle, the road, the control systems, etc. Historical development of con-

trol concepts leads to a more detailed discussion of typical control problems such as signing and marking signal concepts and computations, traffic studies for traffic flow analyses, and the development of complex integrated traffic control systems.  
3 hrs. lecture  
Prerequisite: CE 309

**CE 443 • 3 credits**  
**Advanced Hydraulics**

This course consists of several mini-design projects dealing with practical and advanced hydraulics problems like surface and ground water flows, transitions, culverts, bridge waterways, backwater and flood plains, cavitation and transients, etc.  
3 hrs. lecture  
Prerequisite: CE 311

**CE 491 • 3 credits**  
**Civil Engineering Project**

The project course may be taken only by students with senior status. The project must be approved by the Civil Engineering Department within six weeks of the beginning of the project semester. If the project is not approved by the Civil Engineering Department, the credits acquired may not be applied towards graduation credits.

**CE 495 • 3 credits**  
**Introduction to Construction Engineering**

This course serves as an introduction to construction methods, techniques, and engineering considerations. Construction systems such as buildings, bridges, tunnels, dams, and transportation systems are studied. Construction Engineering applications such as formwork and falsework design, earthwork compaction and consolidation, and concrete systems are studied.

Cost and estimating techniques are studied. Selected construction projects will be examined.  
3 hrs. lecture  
Prerequisite: CE 308, CE 403.

# Electrical Engineering

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## Faculty and Fields of Interest

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**Hans v.d. Biggelaar** • micro-processors, computers

**Paul R. Caron** • antennas, plasmas

**Chi-hau Chen** • communications systems, pattern recognition

**Lester W. Cory** • audio-visual systems, computers

**Lee E. Estes** • electrooptics, underwater acoustics

**Gilbert Fain** • underwater acoustics, active circuits

**Lenine M. Gonsalves** (chairperson) • power systems, circuit design

**John W. Gray** • solid state electronics, microprocessors

**John O. B. Greaves** • computer science, computer architecture

**Bertram B. Hardy** • power engineering, energy conversion

**Robert C. Helgeland** • marine electronics, solid state electronics

**Daniel J. Murphy** • system analysis, filter theory

**Peter Rizzi** • microwave electronics, high frequency systems

**Roman Rutman** • control theory, systems analysis

**Richard Walder** • circuit theory, power systems

The Electrical Engineering program is designed to prepare students for careers as practicing engineers in the wide variety of fields concerned with electrical and electronic devices and systems. Also, for those students who intend to pursue graduate studies on either a full or part-time basis, this program is consistent with graduate school requirements.

Electrical Engineering encompasses many specialties such as communication, instrumentation, automation, power use and distribution, microwave devices and systems, and digital and analog techniques. In all of these specialties the electrical engineer must be familiar with devices and systems and he must be able to perform various functions such as research and development, systems analysis, management, production, testing, quality control and sales. He may pursue

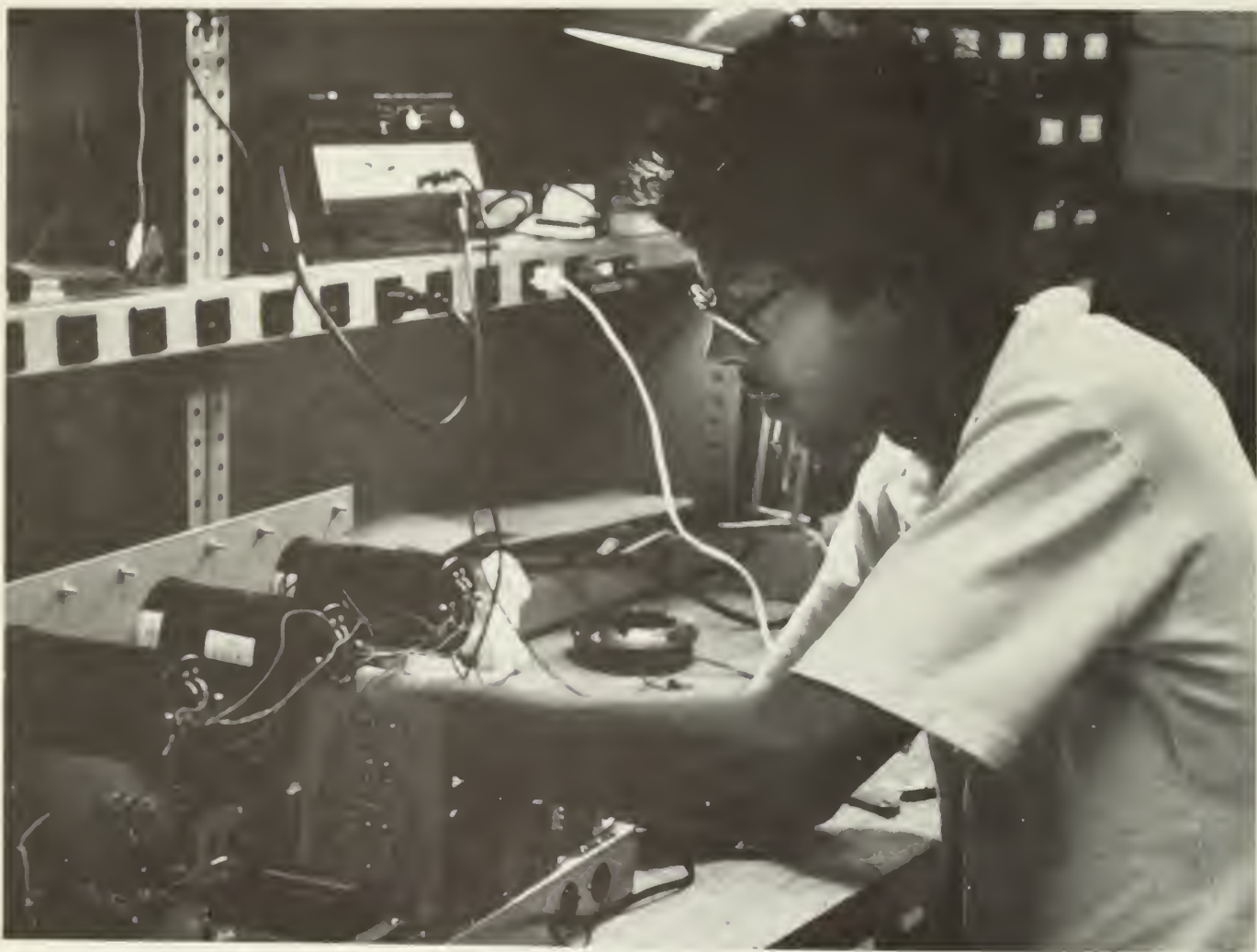
careers in monitoring and control of the environment, space exploration, transportation systems, ocean engineering, energy resources and computer science.

The student begins to identify with his field in the second year of study, and in the third year he gains a foundation for further study in all branches of electrical engineering. A senior year composed primarily of elective courses allows the student to concentrate his studies in one or more areas of his choice. A faculty advisor from the department is available to aid the student with his selections. A core of basic science and mathematical courses is interwoven throughout the four years of study and the student has the opportunity to elect 18 credit hours in the humanities and social sciences. Six credit hours of free electives

can also be used for specialized study.

The Electrical Engineering Department is nationally accredited by the Engineering Council for Professional Development (ECPD) and the student can associate with his profession through the student chapter of the Institute of Electrical and Electronics Engineers. Qualified students can join the Zeta Xi Chapter of the Electrical Engineering National Honor Society, Eta Kappa Nu.







## Requirements

First Year				Semester Credits	First	Second
EN	151	152	Engineering Mechanics I, II		4	4
*EN	161		Engineering Design Graphics		3	
*CS	261		Principles of Computer Programming			3
MA	111	112	Analytical Geometry and Calculus I, II		4	4
CH	151	152	Principles of Modern Chemistry I, II		3	3
E	101	102	Freshman English I, II		3	3
					17	17
Second Year				Semester Credits	First	Second
MA	212		Differential Equations		3	
MA	211		Analytical Geometry and Calculus III			4
PH	211		Physics III		3	
PH	221		Physics Laboratory III		1	
PH	232		Radiation and Waves			3
PH	242		Radiation and Waves Laboratory			1
EN	201	EE 202	Elements of Electrical Engineering I, II		3	3
EN	251		Principles of Measurements		1	
EE	361		Digital Logic and Design			3
EE	252		Electrical Measurements Lab			1
EN	231		Material Science		3	
EN	221		Material Science Lab		1/2	
			Humanities/Social Science Electives		3	3
					17 1/2	18
Third Year				Semester Credits:	First	Second
EN	301		Applied Engineering Math		3	
EE	311	312	Electronics I, II		3	3
EE	323		Circuit Theory		3	
EE	332		Electromagnetic Theory			3
EE	351	352	Electrical Engineering Lab I, II		1	1
EE	371		Signals and Systems		3	
EE	382		Linear Control Theory			3
			*Technical Elective			3
			Humanities/Social Science Electives		3	3
					16	16
Fourth Year				Semester Credits:	First	Second
EE	451	452	Electrical Engineering Lab III, IV		1	1
EE	471		Communication Theory I		3	
			*Technical Electives		6	9
			Free Electives		3	3
			Humanities/Social Science Electives		3	3
					16	16

\*May be taken in either semester.

\*One technical elective must be used to take EN 232, Engineering Thermodynamics I

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**Technical Electives Offered by the Electrical Engineering Department:**

EE	324*	Computer Aided Network Analysis
EE	401 402*	Undergraduate Research and Independent Study
EE	403	Special Topics in Electrical Engineering
EE	411	Semiconductor and Integrated Circuits
EE	412	Wave-Forming Circuits
EE	422	Network Synthesis and Design
EE	434	Antennas and Propagation
EE	432	Electromagnetic Propagation
EE	435 436	Microwave Theory I, II
EE	438*	Optical Devices
EE	441*	Energy Conversion Devices
EE	443 444	Power Systems I, II
EE	457 458	Introduction to Computer Simulation I, II
EE	461	Computer Organization
EE	461	Computer Organization
EE	463	Logic and Sequential Machines
EE	464	Digital System Design
EE	472	Advanced Communication Systems
EE	474	Signal Detection Theory
EE	475*	Digital Signal Processing
EE	476	Information Transmission and Coding
EE	481	Advanced Control Theory
EE	482	Optimal Control and Estimation Theory
EE	484	Optimization Theory
EE	485	Mathematics of Systems Analysis
OE	396*	Physical Oceanography
OE	491	Underwater Acoustics I
OE	493	Underwater Acoustics II
OE	494	Ocean Instrumentation
OE	495	Fundamentals of Ocean Engineering I
OE	496	Fundamentals of Ocean Engineering II
CS	262*	Introductory Computer Science

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At least nine credits of technical electives must be taken from electives offered by the Electrical Engineering Department except by approval of the Department

All technical electives taken outside the department must be approved

\*Open to third and fourth year students

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## Electrical Engineering/Ocean Option

The Ocean Option in the undergraduate electrical engineering program is designed to expose the student to some of the scientific and engineering aspects of the off-shore world and to motivate the student to pursue careers oriented to preserving, exploring and utilizing the oceans resources.

The first five semesters for those electing this option will be the same as for the electrical engineering program. The option begins in the second semester of the third year with an introduction to physical oceanography (technical elective OE 396), and in the senior year the student takes nine credits in ocean engineering subjects.

Fourth Year			Semester Credits: First      Second	
OE 491		Underwater Acoustics I	3	
OE 495		Fundamentals of Ocean Engineering		3
OE 494		Ocean Instrumentation		3
EE 451	452	Electrical Engineering Lab III, IV	1	1
EE 471		Communication Theory I	3	
		Technical Elective	3	3
		Free Elective	3	3
		Social Science/Humanities Elective	3	3
			<hr/> 16	<hr/> 16

Ocean Courses will only run on sufficient student demand





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## Electrical Engineering Courses

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### **EN 201 • 3 credits** **Elements of Electrical Engineering I**

This course introduces the student to the basic theory and techniques of circuit analysis and electromechanical energy conversion. Topics include AC and DC circuits, magnetic circuits and the natural response of electrical and mechanical elements. Electric motors and generators are also discussed and analyzed.

Prerequisite: MA 112

### **EN 251 • 1 credit** **Principles of Measurements**

This course provides an introduction to those thought processes that are fundamental to experimental work in all areas of engineering. Topics include the purpose and mechanics of measurements as well as the organization and reporting of data. Also discussed is the statistical analysis of data and the evaluation of measurement errors.

Prerequisite: MA 212 to be taken concurrently

### **EN 301 • 3 credits** **Applied Engineering Mathematics**

A review of complex numbers precedes the introduction to functions of a complex variable and the following topics are discussed: Cauchy-Riemann equations, Cauchy's theorems, series expansions and residues and Bromwich contours. The inverse Laplace transform is presented. Vector algebra is reviewed and the foundations of vector calculus including the gradient, the divergence and the curl are presented with application to physical problems. Various vector integral theorems are discussed. The theory of partial differentiation is applied to maxima and minima problems and Lagrange multipliers and the

elements of the calculus of variations are presented. Examples deal with Hamilton's principle and the Brachistochrone problems. After a review of determinants, the theory of matrix algebra is presented with emphasis on the solution of linear algebraic equations and eigenvalue problems. Techniques relating to numerical solution of complex systems are presented.

Prerequisite: MA 211

### **EE 202 • 3 credits** **Elements of Electrical Engineering II**

This course begins with a review of steady-state AC circuit theory. Transient analysis of circuits is developed using the Fourier and Laplace transforms. The remainder of the course introduces the student to the physics of electronic materials, the semiconductor diode, the transistor and the concept of feedback.

Prerequisite: EN 201

### **EE 252 • 1 credit** **Electrical Measurements Lab** Basic circuit and measurement experiments and digital experiments are done in this laboratory course.

3 hours/week

Prerequisite: EN 251

### **EE 311, 312 • 3 credits each** **Electronics I, II**

This course will review the principles and circuit modeling of vacuum tube and semiconductor devices. Amplifier design and analysis, including such topics as low-frequency amplifiers, multistage design, bandpass amplifiers, transient and frequency response, will be discussed. Other topics will be operational amplifiers, oscillators, modulators and detectors. 3 hrs. lecture per semester  
Prerequisite: EE 202 or equivalent.

### **EE 323 • 3 credits** **Circuit Theory**

The course involves the development of techniques for the analysis of linear network equations. The state variable method is discussed and applied to network systems. Various network theorems are developed and methods are used in the solution of network equations.

3 hrs. lecture

Prerequisite: EE 202

### **EE 324 • 3 credits** **Computer-Aided Network Analysis**

This course is intended to provide an introduction to computer-aided analysis of electrical networks. No prior knowledge, other than introductory classical circuit theory and Fortran, is assumed. Matrix theory and network topology will be used to write complete circuit analysis programs. Techniques of numerical solutions for classical differential equations and solutions of state equations will be covered. The course will also include the use of a generalized electronic circuit analysis program, such as ECAP.

Prerequisite: Fortran and Introductory Circuit Theory.

### **EE 332 • 3 credits** **Electromagnetic Theory**

This course will cover stationary and time-varying electric and magnetic fields, circuit concepts consistent with Maxwell's equations, the Smith transmission line chart, and waves in isotropic media.

3 hrs. lecture

Prerequisite: EN 301, PH 211

### **EE 351, 352 • 1 credit each** **Electrical Engineering Laboratory I, II**

This two semester laboratory series includes the use of measuring instruments and tech-

niques in the investigation of non-linear device characteristics, and the network response of basic electronic circuits. Emphasis is on semiconductor devices although vacuum-tube and energy-conversion devices will be included.  
3 hrs. laboratory/semester  
Prerequisite: EE 311, 312 and EE 323, 332 taken concurrently

**EE 353 • ½ credit**  
**Analog Simulation Laboratory**  
This laboratory course is devoted to the study and use of analog simulation; first and second order systems will be programmed.  
1 ½ hrs.  
Prerequisite: EE 202, MA 212

**EE 361 • 3 credits**  
**Digital Logic and Design**  
An introduction to digital techniques from a functional point of view. This course provides the basics of binary arithmetic, logic functions and design with digital devices. Material covered includes quantization, binary numbers and codes, Boolean algebra, digital circuit elements, and digital algorithms.  
Prerequisite: College level Algebra

**EE 371 • 3 credits**  
**Signals and Systems**  
Frequency domain analysis of linear systems is introduced. Representation of signals by Fourier series, Fourier transform, bilateral Laplace transform, and unilateral Laplace transform are covered in detail. Convolution theorem, impulse response, physical realizability and electric wave filters are also discussed.  
3 hrs. lecture  
Prerequisite: EE 202

**EE 382 • 3 credits**  
**Control Theory**  
Electrical and mechanical analogs, signal flow graphs, feedback systems, Bode and Nicholas diagrams, and root-loci plots are presented.  
3 hrs. lecture  
Prerequisite: EE 371 or EE 323

**EE 401, 402 • 3 credits each**  
**Undergraduate Research and Independent Study**  
Investigations of a fundamental and/or applied nature intended to develop research techniques, initiative, and self-reliance. Also, studies into areas not included in the formal course offerings. Admission to the course is based on a formal proposal endorsed by an advising professor. On the recommendation of the advising professor the course may be extended for another three credits.  
Prerequisite: Senior or second semester junior standing

**EE 403 • 3 credits**  
**Special Topics in Electrical Engineering**  
Topics of interest to electrical engineering. Course contents may vary from year to year.

**EE 411 • 3 credits**  
**Semiconductor and Integrated Circuits**  
The analysis and design of semiconductor circuits, including transistors, tunnel diodes, and selected topics on use of modern semiconductor devices and integrated circuits are presented.  
3 hrs. lecture  
Prerequisite: EE 311, 312 or equivalent

**EE 412 • 3 credits**  
**Wave-Forming Circuits**  
Theory and design of generators and shapers of non-sinusoidal waves, including clippers, clippers, limiters, multivibrators,

etc. are discussed.  
3 hrs. lecture  
Prerequisite: EE 312

**EE 422 • 3 credits**  
**Network Synthesis and Design**  
A senior level course in the fundamental concepts of network synthesis, including a study of physically realizable 1-port and 2-port networks, maximally-flat filter functions, and discussions of some contemporary methods of synthesis and design.  
3 hrs. lecture  
Prerequisite: EE 323

**EE 431 • 3 credits**  
**Antennas and Propagation**  
This course involves various radiating systems including arrays, aperture antennas, and broad-band antennas. Also discusses groundwave propagation and isosoheric propagation.  
3 hrs. lecture  
Prerequisite: EE 332

**EE 432 • 3 credits**  
**Electromagnetic Propagation**  
This course begins with a discussion of the properties of the earth's atmosphere and ionosphere and the influence of the earth's magnetic field and the sun. Techniques for analyzing and predicting wave propagation through these media will be presented as well as measurement techniques such as ionograms for determining the properties of the media. The characteristics of communication systems will be discussed with emphasis on deep space links, short wave earth-ionosphere propagation and near earth point-to-point microwave communication links.  
3 hrs. lecture  
Prerequisite: EE 332

**EE 435 • 3 credits**  
**Microwave Theory I**  
Electromagnetic theory is reviewed. Transmission lines and

waveguides are analyzed from a unified standpoint and the Smith Chart is utilized. Microwave devices such as filters, matching devices and slow and fast wave structures are analyzed and strip-line techniques are discussed. The theory of various microwave devices is presented.  
3 hrs. lecture  
Prerequisite: EE 332

**EE 436 • 3 credits**  
**Microwave Theory II**  
The theory of Microwave Circuit Analysis is presented and used in analyzing devices and systems. The microwave resonator is discussed. Periodic structures, filters, and space charge waves are discussed and used to introduce the foundations of microwave generators such as klystrons, traveling wave tubes and masers.  
3 hrs. lecture  
Prerequisite: EE 435

**EE 438 • 3 credits**  
**Optical Devices**  
This course deals with the behavior and principles of operation of the following devices: lenses, prisms, polarizers, waveplates, interferometers, filters, beam splitters, light sources including lasers, light modulators, light detectors, film, microdensitometers, image intensifiers.  
3 hrs. lecture  
Prerequisite: Junior or senior standing

**EE 441 • 3 credits**  
**Energy Conversion Devices**  
There are many methods of energy conversion of interest to engineering. This course is a study of energy sources, conversion and storage, included will be a thermoelectric process and electro-chemical processes. Specialized devices utilizing modern concepts of energy con-

version will be surveyed.  
3 hrs. lecture  
Prerequisite: EE 323

**EE 443 • 3 credits**  
**Power Systems I**

The first semester of power system analysis will include a general study of the power industry and the role of the engineer in it. A thorough study of transmission systems including curve diagrams, and the per unit system as applied to power systems is the essence of this course.  
3 hrs. lecture  
Prerequisite: EE 323

**EE 444 • 3 credits**  
**Power Systems II**

Studies of load flow and economical operation of power systems will be followed by an introduction of symmetrical three-phase faults, symmetrical components, and analysis of unsymmetrical faults. The semester will conclude with an overall review of stability.  
3 hrs. lecture  
Prerequisite: EE 443

**EE 451 • 1 credit**  
**Electrical Engineering Laboratory III**

This is a continuation of the laboratory sequence and will include laboratory work in electronics, microwaves, and control systems.  
3 hrs. laboratory  
Prerequisite: EE 352

**EE 452 • 1 credit**  
**Electrical Engineering Laboratory IV**

Continuation of the undergraduate laboratory sequence including an investigation of a particular topic or project proposed by the student or assigned by the faculty.  
3 hrs. laboratory  
Prerequisite: EE 451

**EE 457, 458 • 3 credits each**  
**Introduction to Computer Simulation I, II**

This two-semester course provides a comprehensive introduction to analog, hybrid and digital simulation. Topics to be covered are analog simulation of linear and non-linear systems, transfer functions and state-variable simulation, simulation with combinational digital logic and sequential digital logic, digital-to-analog and analog-to-digital conversions, and digital simulation of continuous systems. Laboratory work accompanies the course.  
3 hrs. lecture per semester  
Prerequisite: MA 212, basic electronics and some familiarity with digital techniques

**EE 461 • 3 credits**  
**Computer Organization**

This software oriented course will study various information structures and their applications, the structure of assemblers and macro-assemblers, formalisms for describing natural and machine languages, compiler syntax and semantics, the software architecture of interactive systems and the functions of an operating system. Experience in systems programming and the use and/or modification of the operating system on the PDP 11/45.  
4 hrs. lecture  
Prerequisite: CS 262

**EE 463 • 3 credits**  
**Logic and Sequential Machines**

A hardware design course that will study Boolean algebra, combinatorial and sequential logic, state diagrams, simplification techniques, an analysis and evaluation of digital and hybrid integrated circuit technologies. Experience will be gained in designing and building digital

and hybrid circuits.  
3 hrs. lecture  
Prerequisite: EE 361

**EE 464 • 3 credits**  
**Digital Systems Design**

Projects oriented class for the design and execution of computer based digital and/or analog projects to be realized in hardware, software and preferably a combination of the two. Projects will be implemented on the PDP 11/45 computer. Studies in interactive systems, game-playing machines, intelligent terminals, computer graphics and artificial intelligence.  
Prerequisite: EE 463

**EE 471 • 3 credits**  
**Communication Theory I**

A course required of electrical engineering seniors and elective to others, including Fourier series and, Fourier transforms, signals and linear networks, matched filter, random variables and probability functions, autocorrelations and power spectra, noises, amplitude modulation, phase modulation and frequency modulation, sampling theory, pulse modulation, entropy and channel capacity, system comparison, digital modulation systems.  
3 hrs. lecture  
Prerequisite: EE 371

**EE 472 • 3 credits**  
**Advanced Communications Systems**

Review of communications theory, microwave mobile communications, data communications, optical communications, satellite communications. The course emphasizes on overall communications system design.  
3 hrs. lecture  
Prerequisite: EE 471

**EE 474 • 3 credits**  
**Signal Detection Theory**

Simple and composite hypothesis testing, detection of known signals, matched filter and correlation detection, detection of signals with random parameters (amplitude, phase, frequency and time of arrival), multiple pulse detection of signals, estimation of signal parameters, applications to radar and sonar.  
3 hrs. lecture  
Prerequisite: EE 471

**EE 475 • 3 credits**  
**Digital Signal Processing**

Sampling process, A/D and D/A conversions, discrete linear systems, recursive and non-recursive digital filter designs, quantization effects in digital filters, fast algorithms for discrete Fourier transforms and Walsh-Hadamard transform, high-speed convolution and correlation operations, discrete generalized linear filtering, applications to digital processing of seismic data.  
3 hrs. lecture  
Prerequisite: EE 371

**EE 476 • 3 credits**  
**Information Transmission and Coding**

Self-information and entropy, sources of information, the structure of language, noiseless coding and the noiseless discrete channel, some properties of codes, the construction of codes, mutual information, channel capacity and Shannon's theorems, error-correcting codes and decoding algorithms, applications to communication nets.  
3 hrs. lecture  
Prerequisite: EE 471

**EE 481 • 3 credits**  
**Advanced Control Theory**

The synthesis of feedback con-



trol systems is presented. Continuous and discrete systems are treated. Non-linear elements are analyzed and the state variable approach is used

3 hrs. lecture

Prerequisite: EE 382

**EE 482 • 3 credits**  
**Optimal Control and Estimation Theory**

Optimal design of control systems via analytical techniques: calculus of variations, dynamic programming, and the maximum principle. Observer theory and Kalman filtering are presented. The digital computer is used to solve many of the problems encountered in the course

3 hrs. lecture

Prerequisite: EE 481

**EE 484 • 3 credits**  
**Optimization Theory**

Introduction to mathematical programming techniques and their application to engineering problems as well as to other fields. Unconstrained optimization techniques are stressed. Additional topics including linear and quadratic programming are discussed. Computer solutions are emphasized

3 hrs. lecture

Prerequisite: Calculus and some linear algebra

**CS 261 • 3 credits**  
**Computer Programming**

A course designed to give the student familiarity with digital computer methods and programming with emphasis on Fortran

3 hrs. lecture

No prerequisite.

**CS 262 • 3 credits**  
**Introductory Computer Science**

History and uses of computers. Addressing structures and stack operations. Representation of information and basic memories.

3 hrs. lecture

Prerequisite: CS 261 or Fortran programming.

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**Ocean Engineering Courses**

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**OE 396 • 3 credits**  
**Physical Oceanography**

The physical properties and processes of the ocean and the ocean floor theory of ocean currents and tides, and temperature and salinity distribution are discussed. Both theoretical and physical descriptions of the dynamics of currents, tides, waves, and sea-air interaction phenomena with consideration of methods of observation are covered. Special engineering problems associated with modern oceanographic instrumentation design and use will be reviewed. Field trips will be made to nearby oceanographic laboratories and industrial concerns.

3 hrs. lecture

Prerequisite: Differential Equations.

**OE 491 • 3 credits**  
**Underwater Acoustics I**

Introduction to the principles of underwater acoustics. Lumped and distributed vibrating systems, the wave equation, plane and spherical acoustic waves and boundary conditions are developed. The Eikonal equation, ray tracing, introduction to the sonar equations and propagation losses will be discussed

3 hrs. lecture

Prerequisite: EN 301

**OE 492 • 3 credits**  
**Ocean Waves**

A theoretical approach to the hydrodynamics of wave motion. The necessary hydrodynamic equations will be developed. The detail of the linearized small amplitude wave will be presented and applied to the deep and shallow water case. Solutions by the addition of small amplitude waves will be used to develop various ocean wave models. Finite amplitude waves will be introduced

3 hrs. lecture

Prerequisite: EN 301

**OE 493 • 3 credits**  
**Underwater Acoustics II**

A continuation of Underwater Acoustics I. Propagation in deep and shallow water, normal mode solution, reverberation, scattering and ambient noise will be discussed. Applications to sonar, navigation and communication systems.

3 hrs. lecture

Prerequisite: OE 491

**OE 494 • 3 credits**  
**Ocean Instrumentation**

The body of the course will be devoted to the development of an engineering model of the underwater acoustic transducer including relationships for transducer directivity and efficiency. The requirements and limitations

of ocean instrumentation and the physical principles of different sensors will be developed

3 hrs. lecture

Prerequisite: EN 301 and

EN 212.

**OE 495 • 3 credits**  
**Fundamentals of Ocean Engineering I**

Select problems unique to ocean engineering will be discussed. The course will be interdisciplinary in nature and will cover topics such as information transmission in the ocean, the effect of ocean waves, navigation, etc.

3 hrs. lecture

Prerequisite: OE 396; Open to

senior engineering students.

**OE 496 • 4 credits**  
**Fundamentals of Ocean Engineering II**

A continuation of OE 495 with the inclusion of comprehensive at sea group laboratory projects. The projects, which will be carried out on SMU's R/V Corsair, will be either an extensive experiment or measurement in the ocean. They will be planned during the early part of the semester and will require approximately 5 day trips in the spring.

3 hrs. lecture; 3 hrs. laboratory

Prerequisite: OE 495 or permission of instructor



# Mechanical Engineering

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## Faculty and Fields of Interest

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**Dimitri Argy** • materials science, physical metallurgy, powder metallurgy

**Alden Counsell** • mechanics, strength of materials, manufacturing processes

**David J. Creamer** • mechanics, analytical and experimental stress analysis, anisotropic shells

**Ronald DiPippo** (chairman, sabbatical leave 1977-1978) • thermodynamics, propulsion systems, geothermal energy conversion systems

**Fryderyk E. Gorczyca** • graphics, kinematics, tool engineering

**John W. Hansberry** • mechanics, control theory, shell theory

**Conrad P. Richard** • machine design, graphics, industrial design and planning

**Thomas B. C. Shen** • heat transfer, thermodynamics, fire research

**Albert Stewart** • graphics, descriptive geometry

**Hans U. Thommen** • fluid mechanics, numerical analysis, mechanics

**Howard C. Tinkham** (acting chairman 1977-1978) • mechanics of materials, fluid mechanics, heat transfer

**Eugene R. Williams** • thermodynamics, geology, engineering materials

Mechanical engineers are involved in a broad spectrum of technical activities from the design and manufacture of various products to fundamental research

Mechanical engineers are concerned with the production, transmission and use of power. They design and develop systems which produce power, such as steam and gas turbines, internal combustion engines, nuclear reactors, jet engines, and rocket motors. On the other hand, they design and develop devices which consume power in order to accomplish some other useful result, such as refrigeration and air conditioning equipment, machine tools, rolling mills, and elevators, to name a few.

The environmental impact of these systems forms an integral part of their analysis and design. Mechanical engineers must cope with stringent standards on air and water quality, noise abatement and thermal pollution. Their designs must measure up to very severe performance and environmental quality standards.

Graduates of the Mechanical Engineering program find employment in a number of areas, including private industry, government, consulting firms and education. They may be involved in one or more of the following activities: research, design, development, administration, management, sales or production supervision.

The SMU Mechanical Engineering program is fully accredited by the Engineers Council for Professional Development and has as its goals the preparation of the student for a career in mechanical engineering or for the continuation of his studies

in graduate school. The first two years of the program comprise basic courses in the areas of mathematics, chemistry and physics, together with introductory courses in applied science such as mechanics, materials and electrical science. Specialization occurs during the last two years with courses available in the areas of thermodynamics, fluid mechanics, control systems, materials behavior and mechanical design. In addition an Ocean Option, comprising a sequence of ocean-oriented courses, is available to those who wish to work in the areas of ocean engineering and ocean research.

A student chapter of the American Society of Mechanical Engineers permits the student to initiate his professional contacts through a program of technical and social events which bring the student together with engineers from industry and students from other engineering schools.



### Requirements

First Year				Semester Credits	First	Second
EN	151	152	Engineering Mechanics I, II		4	4
EN	161		*Engineering Design Graphics		3	
CS	261		*Principles of Computer Programming			3
E	101	102	Freshman English I, II		3	3
CH	151	152	Principles of Modern Chemistry I, II		3	3
MA	111	112	Analytic Geometry and Calculus I, II		4	4
					17	17

\*May be taken in either semester.

Second Year				Semester Credits:	First	Second
EN	231		Materials Science		3	
EN	221		Materials Science Laboratory		1/2	
EN	251		Principles of Measurements		1	
MA	212		Differential Equations		3	
PH	211		Physics III (Electricity and Magnetism)		3	
PH	221		Physics III Laboratory		1	
EN	201		Elements of Electrical Engineering I, II		3	3
EE	202					
Humanities/Social Science Electives					3	3
EN	232		Engineering Thermodynamics I			3
ME	224		Thermodynamics Laboratory			1/2
MA	211		Analytic Geometry and Calculus III			4
PH	232		Radiation and Waves			3
PH	242		Radiation and Waves Laboratory			1
					17 1/2	17 1/2

Third Year			Semester Credits	First	Second
EN	301	Applied Engineering Mathematics		3	
ME	301	Mechanical Engineering Laboratory I		1/2	
ME	303	Manufacturing Processes Laboratory		1/2	
ME	311	Dynamics		3	
ME	321	Engineering Thermodynamics II		3	
ME	351	Mechanics of Materials		3	
		Humanities/Social Science Electives		3	3
EE	353	Analog Computer Laboratory			1/2
ME	332	Fluid Mechanics I			3
ME	362	Control Theory			3
ME	392	Mechanical Engineering Design			3
		Technical Elective			3
				16	15 1/2
Fourth Year			Semester Credit	First	Second
ME	401	Mechanical Engineering Laboratory II		1	
ME	411	Heat Transfer		3	
		Technical Electives		6	9
		Humanities/Social Science Electives		3	3
		Free Electives		3	3
ME	494	Mechanical Engineering Design Projects			1
				16	16

#### Technical Electives

ME	412	Applied Heat Transfer
ME	422	Energy Conversion
ME	423	Refrigeration and Air Conditioning
ME	431	Fluid Mechanics II
ME	432	Aircraft and Rocket Propulsion Systems
ME	433	Viscous Flows
ME	434	Statistical Thermodynamics
ME	436	Mobile Power Plants
ME	441	Mechanical Vibrations
ME	442	Introduction to Numerical Methods
ME	452	Mechanics of Materials II
ME	456	Continuum Mechanics
ME	457	Basic Nuclear Engineering
ME	462	Experimental Stress Analysis
ME	463	Advanced Dynamics
ME	471	Physical Metallurgy
ME	472	Metal Forming Operations
ME	473	Powder Metallurgy
ME	475	Theory of Elasticity
ME	476	Lubrication Theory and Applications
ME	496	Directed Study

Student who wish to select technical electives from other departments must receive prior approval from the Mechanical Engineering Department.

# Mechanical Engineering/Ocean Option

The Mechanical Engineering Department offers a package of specialized courses relating to the marine environment for those students whose career objective is to work in ocean-related industries or to further their study in graduate school in Ocean Engineering or Oceanography. The SMU Research Vessel Corsair is available for ocean project work.

The first five (5) semesters of the Ocean Option are identical with the Mechanical Engineering program. The final three (3) semesters are described below.

Third Year			Semester Credits	Second
EE 353	Analog Computer Laboratory			1/2
ME 332	Fluid Mechanics I			3
ME 362	Control Theory			3
ME 392	Mechanical Engineering Design			3
OE 396	Physical Oceanography			3
	Humanities/Social Science Elective			3
				15 1/2

Fourth Year			Semester Credits	First	Second
ME 401	Mechanical Engineering Laboratory II		1		
ME 411	Heat Transfer		3		
OE 492	Ocean Waves		3		
I 403	World Geology		3		
	Humanities/Social Science Electives		3		3
	Free Electives		3		3
	Technical Electives				6
ME 494	Mechanical Engineering Design Projects				1
OE 496	Fundamentals of Ocean Engineering				3
			16		16

Technical Electives (in addition to ME electives)

OE 491	Underwater Acoustics
OE 494	Ocean Instrumentation

Note: As with all elective courses, ocean electives will be presented only when sufficient enrollments exist and appropriate faculty are available.

## Engineering Core Courses

### EN 151 • 4 credits Engineering Mechanics I

The first course in engineering mechanics has two major objectives: First, to introduce the student to the science of engineering mechanics and second to introduce the student to the art of applying science to the solution of engineering problems. The specific vehicle or curricu-

lum to accomplish these objectives will be a study of the statics of rigid bodies. Topics covered in the course include: Statics of Particles; Friction; Systems of Forces; Equilibrium of Rigid Bodies; Analysis of Structures; Distributed Forces. An introduction to Vector Algebra is also included.  
Lecture 4 hours.  
Corequisite: MA 111

### EN 152 • 4 credits Engineering Mechanics II

The study of Newtonian mechanics initiated in EN 151 is continued. This course deals with motions of particles subjected to the action of forces. Several principles are derived from Newton's Laws of motion and are applied to various engineering problems. The student is expected to master several



new concepts associated with Newton's Laws, and to develop an analytical ability in problem-solving. Methods learned in EN 151 will be used and extended to systems in motion. Specific topics covered in the course include: Dimensional Homogeneity of Equations; Kinematics of a Particle; Kinetics of a Particle; Conservation Laws; Principles of Work-energy and of Impulse-momentum; Systems of Particles; Introduction to the Kinematics of Rigid Bodies. Lecture 4 hours. Prerequisite: EN 151, MA 111, MA 112 concurrently.

**EN 161 • 3 credits**  
**Engineering Design Graphics**  
This introductory course has a threefold objective: 1. To develop an awareness of the history and current status of the profession of engineering; 2. To impart the concepts associated with the design process, including the enhancement of creativity; 3. To develop graphic skills for the communication of ideas from the designer to the fabricator. Lecture 2 hours, laboratory 3 hours.

**EN 221 • ½ credit**  
**Materials Science Laboratory**  
The students study the properties of materials in a series of experiments designed to supplement the course material in Materials Science (EN 231). Laboratory 3 hours every other week. EN 231 must be taken concurrently.

**EN231 • 3 credits**  
**Materials Science**  
A fundamental treatment of engineering materials. Properties are discussed on the basis of material structure. Metallic, organic and ceramic materials

are compared and applications are presented. Phases and phase relationships in binary systems are introduced. Solid state reactions and modifications of properties through changes in micro-structure are studied. Stability of materials in service environments is analyzed on the basis of material structure. Lecture 3 hours, recitation 1 hour (optional). Prerequisite: CH 152.

**EN 232 • 3 credits**  
**Engineering Thermodynamics**  
The fundamental concepts and basic principles of classical thermodynamics are established. The Zeroth, First and Second laws of thermodynamics are formulated with recourse to empirical observations and then expressed in precise mathematical language. These laws are applied to a wide range of engineering problems. The properties of pure substances are described using equations of state and surfaces of state. Reversible processes in gases are analyzed by means of the First and Second laws. A representative sampling of engineering applications is discussed and analyzed. Lecture 3 hours, recitation 1 hour (optional). Prerequisite: CH 152, MA 211 concurrently.

**EN 251 • 1 credit**  
**Principles of Measurements**  
This course provides an introduction to those thought processes that are fundamental to experimental work in all areas of engineering. Topics include the purposes and mechanics of measurements as well as the organization and reporting of data. Also discussed is the statistical analysis of data and the evaluation of measurement errors. Lecture/laboratory 2 hours.

**EN 301 • 3 credits**  
**Applied Engineering Mathematics**  
A review of complex numbers precedes the introduction to functions of a complex variable and the following topics are discussed: Cauchy-Riemann equations, Cauchy's theorems, series expansions and residues and Bromwich contours. The inverse Laplace transform is presented. Vector algebra calculus including the gradient, the divergence and the curl are presented with application to physical problems. Various vector integral theorems are discussed. The theory of partial differentiation is applied to maxima and minima problems and Lagrange multipliers and the elements of the calculus of variations are presented. Examples deal with Hamilton's principle and the Brachistochrone problem. After a review of determinants, the theory of matrix algebra is presented with emphasis on the solution of linear algebraic equations and eigenvalue problems. Techniques relating to numerical solution of complex systems are presented. Lecture 3 hours. Prerequisite: MA 211.

**ME 200 • 3 credits**  
**Order and Chaos**  
A treatment of the laws of energy transfer requiring an absolute minimum of mathematics is presented primarily for non-science and non-technical students. The various activities of the course include lectures, discussions, selected readings, field trips, and films. Topics covered: history of developments and personalities in energy; balancing energy accounts; man as an energy converter; time's arrow, energy, entropy, demons, poetry, culture and life. Students in Engineering or Engineering Technology may elect this course as a free elective. Lecture 3 hours. Prerequisite: Sophomore standing or above.

**ME 224 • ½ credit**  
**Thermodynamics Laboratory**  
The experiments conducted are selected to supplement the material presented in Engineering Thermodynamics I for mechanical engineering majors. The experiments include: bomb calorimeter, Junkers-type gas calorimeter, thermocouple fabrication and calibration, Clement-Desormes experiment for specific heat ratio, thermoelectric phenomena, Stirling engine performance and transparent internal combustion engine performance. Laboratory 3 hours every other week. EN 232 must be taken concurrently.

**ME 301 • ½ credit**  
**Mechanical Engineering Laboratory I**  
This course supplements the lectures in Mechanics of Materials I (ME 351). Six to seven experiments are performed in the area of solid deformable mechanics. Emphasis is on the measure-

ment of strain and the mechanical properties of materials used in engineering today. Equipment and/or instrumentation used in this laboratory include a high capacity (50,000 lbf static to 75,000 lbf dynamic) Riehle research Electrohydraulic testing machine, strain gage circuitry and torsion machines. Laboratory 3 hours every other week.

**ME 303 • ½ credit**  
**Manufacturing Processes Laboratory**

This laboratory introduces commonly employed manufacturing operations such as turbing, milling, threading, grinding and welding through a series of experiments and demonstrations. Consideration is given to factors affecting economy and speed of production as well as the accuracy that can be reasonably expected in these processes. Laboratory 3 hours every other week.

**ME 311 • 3 credits**  
**Dynamics**

This course continues a study of dynamics initiated in Engineering Mechanics (EN 152). Matrices are employed as operators of linear spaces; eigenvectors and diagonalization of operators are discussed. Motion in accelerating coordinate systems and dynamics of a system of particles lead to the discussion of rigid body dynamics in three dimensions. A number of examples of rigid body motion are discussed. Free and forced vibrations of one degree of freedom, and free vibrations of multi-degree of freedom systems are studied. The principle of virtual work is introduced and used to briefly discuss stability of equilibrium. Lecture 3 hours. Prerequisite: EN 152, MA 211.

**ME 321 • 3 credits**  
**Engineering Thermodynamics II**

Mechanical engineering applications of ideal and real compressors; gas turbine power systems; a variety of air-standard cycles including the Brayton, Ericsson, Stirling, Otto, Diesel and Wankel cycles; and several vapor cycles including the Carnot, Rankine, modified Rankine, and binary cycle. An introduction to vapor-compression refrigeration and heat pumps is given. Thermochemistry and combustion are discussed with emphasis on application of the First and Second laws to chemical reactions. Chemical equilibria in homogeneous gas systems are studied. The course concludes with a rigorous coverage of dimensional analysis, similarity, and modeling. The Buckingham Pi theorem and the method of indices are discussed and the applications given for several engineering problems. Each student is expected to complete a formal project involving the use of the digital computer on a special problem assignment. Lecture 3 hours, recitation 1 hour (optional). Prerequisite: EN 232

**ME 332 • 3 credits**  
**Fluid Mechanics I**

An introductory chapter deals with the basic properties of fluids. This is followed by a discussion of kinematics of fluid flow, including the derivation of the conservation of mass equation and introduction to the stream function. The momentum equation of inviscid flow is derived next and the momentum theorems are studied. Applications include selected topics in hydrostatics. Some elements of potential flow in two dimensions are introduced next. The influence of compressibility is demon-

strated in a brief discussion of one dimensional compressible flows. The study of the influence of viscosity is restricted to incompressible flows. After discussion of Couette and Poiseuille flow, the concept of boundary layers is introduced. Lecture 3 hours. Prerequisite: EN 232, EN 301.

**ME 351 • 3 credits**  
**Mechanical of Materials I**

The course begins with a review of statics and a discussion of deformation of solids. Stress is introduced only after the student understands the mathematics of strain in two and three dimensions. The student's knowledge of coordinate transformations presented in Dynamics (ME 311) is used to discuss stress and strain as tensors. Elastic deformation under the influence of forces is introduced as a boundary value problem and torsion of a shaft is given as an example. The strength of materials method is used to treat bending of beams, simple structures, and members under combined strain, energy methods and stability are briefly discussed. Lecture 3 hours. Corequisite: ME 311

**ME 362 • 3 credits**  
**Control Theory**

The course begins with a discussion of control system terminology. Modeling of control system elements and the method of linearization and its applicability are discussed. The effects of nonlinearities are briefly mentioned. The Laplace transform, stability, transfer functions, and synthesis are discussed for linear systems. An introduction to statistical methods is presented. Examples of hydraulic, electrical and pneumatic systems are given, and elements of systems such as servo-

motors, cams, gears, and linkages are studied. Lecture 3 hours. Prerequisite: ME 311, EN 301.

**ME 392 • 3 credits**  
**Mechanical Engineering Design**

This course comprises a comprehensive survey of the analytical design methods that are valuable to mechanical engineers. Some of the areas covered are: stress analysis, fatigue, stress concentration, design of curved beams, selection of standardized elements, and lubrication. The objective of the course is to enable the student to handle design problems with confidence and assurance. Lecture 3 hours. Prerequisite: ME 351

**ME 401 • 1 credit**  
**Mechanical Engineering Laboratory II**

Several extensive investigations are carried out into various areas of interest to mechanical engineers. These areas include: internal combustion engines, gas turbines, water cooling towers, heat conduction, convection, radiation, and refrigeration. Laboratory 3 hours. Prerequisite: ME 301; Senior standing.

**ME 411 • 3 credits**  
**Heat Transfer**

The basic principles of heat conduction, forced and free convection and thermal radiation, together with their application to various engineering problems are main topics in this course. Mass transfer and its analogy to heat transfer phenomena is sketched. Special problems, such as boiling and condensation, heat transfer in high speed flow, and fire propagation are introduced. Mathematical analysis motivated by physical rea-



conditioning is emphasized.

Lecture 3 hours.

Prerequisite: ME 321, ME 332, EN 301.

#### **ME 412 • 3 credits**

##### **Applied Heat Transfer**

The extension of basic heat transfer knowledge to various practical fields of interest such as multiphase heat transfer problems including boiling and condensation, environmental heat transfer problems including aspects of the general problems of thermal pollution, special heat transfer experiments, combustion problems including fire propagation, and the design and analysis of man-made heat transfer devices.

Lecture 3 hours.

Prerequisite: ME 411.

#### **ME 422 • 3 credits**

##### **Energy Conversion**

This course starts with an introduction to various energy resources, followed by a description of the use of chemical potential energy, nuclear energy and solar energy; the analysis and design criteria for various energy conversion devices such as generators, transformers, motors, power distribution systems, solar cells, etc. The understanding of the working principles and the essential design conditions are emphasized.

Lecture 3 hours.

Prerequisite: ME 332, EN 232, EE 202.

#### **ME 423 • 3 credits**

##### **Refrigeration and Air-Conditioning**

The basic principles of refrigeration are presented with applications to vapor-compression, steam-jet, and absorption systems, together with heat pumps. Psychrometrics and the physiological factors involved in air-conditioning are discussed along

with the analysis of various processes. In particular the use and analysis of water cooling towers is emphasized.

Lecture 3 hours.

Prerequisite: ME 321.

#### **ME 431 • 3 credits**

##### **Fluid Mechanics II**

After a review of the basic equations of fluid dynamics, potential flow fields are investigated using complex potentials. Flows with point and line singularities are studied. An introduction to vorticity dynamics, airfoil and wing theory is presented. Two-dimensional laminar boundary layers in incompressible and compressible flows are investigated. The course concludes with a study of shock waves and expansion fans.

Lecture 3 hours.

Prerequisite: EN 232, ME 332.

#### **ME 432 • 3 credits**

##### **Aircraft and Rocket Propulsion Systems**

This course deals with the mechanics and thermodynamics of airborne propulsion systems. Thrust equations and efficiencies are derived from first principles and applied to a variety of systems. Airbreathing engines that are discussed include ramjets, turbojets, turbopumps, and turboprops. The aerothermodynamics of inlets and nozzles is presented. The course concludes with an introduction to rocket propulsion, including the identification and classification of types of rocket systems, fundamental definitions and derivations, and rocket dynamics.

Lecture 3 hours.

Prerequisite: ME 321, ME 431.

#### **ME 433 • 3 credits**

##### **Viscous Flows**

The basic equations of viscous flow for Newtonian fluids are de-

veloped. Some exact solutions are demonstrated. Slow viscous flow and the application to lubrication theory is then presented. This is followed by an introduction to laminar boundary layer theory. The transition to turbulent flow, turbulent boundary layers and turbulent mixing are presented next. Emphasis is placed on incompressible flows.

Lecture 3 hours.

Prerequisite: ME 332, EN 301.

#### **ME 434 • 3 credits**

##### **Statistical Thermodynamics**

The topics covered include kinetic theory, transport phenomena, an introduction to statistical and quantum mechanics. These principles are applied to gases, liquids, and solids. The First, Second and Third Laws of thermodynamics are interpreted in the light of statistical concepts.

Lecture 3 hours.

Prerequisite: EN 232, EN 301.

#### **ME 436 • 3 credits**

##### **Mobile Power Plants**

The course begins with a review of applicable power cycles; factors governing engine efficiency are discussed. Mechanical design of engine components constitutes the bulk of the course with attention given to stress, vibrations, wear and heat transfer. The utilization of power plants other than heat engines, such as fuel cells, is considered.

Lecture 3 hours.

Prerequisite: ME 321.

#### **ME 441 • 3 credits**

##### **Mechanical Vibrations**

The course begins with a discussion of generalized coordinates and the Lagrangian method of determining a system's equations of motion. Normal modes and normal coordinates are introduced and the method of matrix iteration is used to find

natural frequencies and modes. Free vibration of continuous systems is considered and techniques for finding natural frequencies are developed. Forced and transient responses of one degree of freedom systems are treated extensively, and forced response of multi-degree of freedom systems is discussed. Electrical analogies, use of the analog computer, and modeling of actual physical systems are discussed.

Lecture 3 hours.

Prerequisite: ME 311, EN 301.

#### **ME 442 • 3 credits**

##### **Introduction to Numerical Methods**

Emphasis is placed on numerical solutions of nonlinear problems, such as nonlinear equations and systems of nonlinear equations, ordinary differential equations and systems of differential equations including boundary value problems. In addition, selected partial differential equations and integral equations are discussed. The stability and accuracy of the numerical methods are investigated. Students are expected to have a working knowledge of FORTRAN IV programming.

Lecture 3 hours.

Prerequisite: EN 301.

#### **ME 452 • 3 credits**

##### **Mechanics of Materials II**

After reviewing the development of the flexure formula, the stress equation is derived for unsymmetrical bending. Curved beams loaded in the plane of curvature are analyzed as are beams with combined axial and lateral loadings. The general equation for beams on elastic foundations and its applications are studied. Stresses and deflections due to dynamic loads are examined. The basic equations of elasticity are developed and two dimen-

sional problems analyzed using Airy's stress function. Solutions are compared to strength of materials results. Energy methods are discussed. The Lagrange plate equation is derived and plates fabricated from modern composite materials are discussed. Lecture 3 hours. Prerequisite: ME 351, EN 301.

#### **ME 456 • 3 credits** **Continuum Mechanics**

Continuum Mechanics seeks to treat in a unified manner the mechanics of solids and fluids and also such materials that exhibit dual behavior, depending on whether the shear rate is small or large. The word mechanics includes, among other things, material behavior so that a good portion of the course will be devoted to obtaining constitutive relations. Topics include: (1) elements of Cartesian tensors, (2) derivation of conservation laws using Cartesian tensors, (3) constitutive relations (material behavior) - Hookean solid, Newtonian fluid (thixotropic, viscoelastic), plastic materials, (4) solution of problems in elasticity and fluid mechanics. Lecture 3 hours. Prerequisite: ME 452

#### **ME 457 • 3 credits** **Basic Nuclear Engineering**

A consideration and discussion of the engineering problems in nuclear power generation. Topics include a review of basic atomic structure, radioactive properties of nuclei, nuclear reactions, radiation detection, radiation protection, neutron interactions, steady state reactor core, transient reactor behavior and control, nuclear thermal aspects, and reactor power plant design. Discussion emphasizes the application of basic principles, examples of design processes and

detailed performance analysis. Lecture 3 hours. Prerequisite: ME 321

#### **ME 462 • 3 credits** **Experimental Stress Analysis**

The course is divided into two major parts. The first part of the course deals with theory and practice of photoelastic methods which are applied to classical experimental stress analysis of models and are modified for use in photoelastic coatings. Three dimensional problems are studied and solved by the use of the digital computer. Emphasis is on the interpretation, limitations and designing by photoelasticity. The second part of the course presents the theory and application of mechanical and electrical strain gauges, and brittle coatings. Installation, instrumentation and circuitry of gauge set-ups or transducer use in experimental stress analysis are discussed. Lecture 3 hours. Prerequisite: ME 351

#### **ME 463 • 3 credits** **Advanced Dynamics**

The course starts with a review and extension of classical Newtonian mechanics. This is followed by an introduction to Lagrangian dynamics. Emphasis is placed on the solution of real-life problems with complexities commensurate with the sophistication of the student. Lecture 3 hours. Prerequisite: ME 311, EN 301.

#### **ME 471 • 3 credits** **Physical Metallurgy**

The structure of metals and alloys and their determination by x-ray diffraction is presented. Structural imperfections and their influence on mechanical properties are considered. The electron theory of metals is introduced. Binary phase diagrams are studied on the basis

of thermodynamic principles. Emphasis is placed on the iron-carbon system. Subjects such as creep and fatigue are also considered. Lecture 3 hours. Prerequisite: EN 231

#### **ME 472 • 3 credits** **Metal Forming Operations**

Plastic deformation is presented in terms of dislocation theory. Various methods of the failure of metals are discussed and the field of plastic working and shaping is studied. Emphasis is on metallurgical interpretation and the influence of structure on mechanical properties. Operations such as forging, rolling, extrusion, and rod, wire and tube drawing are presented in some detail. Lecture 3 hours. Prerequisite: EN 231

#### **ME 473 • 3 credits** **Powder Metallurgy**

Characterization and production of powder. Measuring techniques and bulk properties. Powder compaction methods. Behavior of powders during compaction and green properties. Sintering. Material transport and transformations during sintering. Sintering atmospheres and furnaces. Properties of sintered materials. Engineering properties and product design. Applications. Lecture 3 hours. Prerequisite: EN 231

#### **ME 475 • 3 credits** **Theory of Elasticity**

After a review of the mathematical definitions of stress and strain, the generalized Hooke's law, equations of equilibrium and the compatibility equations are derived. Various two dimensional problems are solved in Cartesian and polar coordinates. Theory of torsion is applied to

prismatic and axially symmetric bars. The method of finite differences is applied to the torsion problem and to the plate bending problem. Variational methods and energy principles; minimum potential and complementary energy theorems. Lecture 3 hours. Prerequisite: ME 452

#### **ME 476 • 3 credits** **Lubrication Theory and Applications**

The fundamentals of viscosity and flow and means of viscosity determination. Hydrostatic and hydrodynamic theories of lubrication are developed with applications in the form of oil pads, step bearings and journal bearings. Squeeze film theory is developed. Principles of bearing design for efficient lubrication and journal bearing power losses are discussed. Lecture 3 hours. Prerequisite: ME 332

#### **ME 494 • 1 credit** **Mechanical Engineering Design Projects**

In this course the student applies his knowledge gained in various courses to the synthesis, analysis, and design of a system in his particular field of interest. Offered by the staff or the department. Laboratory 3 hours. Prerequisite: Senior standing.

#### **ME 496 • 3 credits** **Directed Study**

A student works under the direction of a faculty member and pursues a specific line of study in an area of interest to the student. The work may deal with subject matter not normally available in the curriculum, or may involve a design project. Lecture/Laboratory arranged as required. Prerequisite: Senior standing.



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## Ocean Engineering Courses

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### **OE 396 • 3 credits**

#### **Physical Oceanography**

The physical properties and processes of the ocean and the ocean floor theory of ocean currents and tides, and temperature and salinity distribution are discussed. Both theoretical and physical descriptions of the dynamics of currents, tides, waves, and sea-air interaction phenomena with consideration of methods of observation are covered. Special engineering problems associated with modern oceanographic instrumentation design and use will be reviewed. Field trips will be made to nearby oceanographic laboratories and industrial concerns.

Lecture 3 hours

Prerequisite: MA 212

### **OE 491 • 3 credits**

#### **Underwater Acoustics I**

Introduction to the principles of underwater acoustics. Lumped and distributed vibrating systems, the wave equation, plane and spherical acoustic waves and boundary conditions are developed. The Eikonal equation, ray tracing, introduction to the sonar equations and propagation losses will be discussed.

Lecture 3 hours

Prerequisite: EN 301

### **OE 492 • 3 credits**

#### **Ocean Waves**

A theoretical approach to the hydrodynamics of wave motion. The necessary hydrodynamic equations will be developed. The detail of the linearized small amplitude wave will be presented and applied to the deep and shallow water case. Solutions by the addition of small amplitude waves will be used to develop various ocean wave models. Finite amplitude waves will be introduced.

Lecture 3 hours.

Prerequisite: EN 301

### **OE 494 • 3 credits**

#### **Ocean Instrumentation**

The body of the course will be devoted to the development of an engineering model of the underwater acoustic transducer including relationships for transducer directivity and efficiency. The requirements and limitations of ocean instrument sensors will be developed.

Lecture 3 hours.

Prerequisite: EN 301, EE 202.

### **OE 495 • 3 credits**

#### **Fundamentals of Ocean Engineering I**

Select problems unique to ocean engineering will be discussed. The course will be interdisciplinary in nature and will cover topics such as information transmission

in the ocean, the effect of ocean waves, navigation, etc.

Lecture 3 hours.

Prerequisite: OE 396 Open to senior engineering students.

### **OE 496 • 3 credits**

#### **Fundamentals of Ocean Engineering II**

Select problems unique to ocean engineering will be discussed. The course will be interdisciplinary in nature and will cover topics such as information transmission in the ocean, the effect of ocean waves, navigation, etc.

### **I 403 • 3 credits**

#### **World Geology**

World Geology is a first course in geological science presenting concepts based upon the recent discoveries that opened up new approaches to age-old mysteries and is now the plate tectonics, continental drift and spreading sea floor theories of the "new" geology. The study of the ocean, the sea floor and coastlines plays an important part in the course. The nature and properties of the materials composing the earth, their distribution and the processes by which they are formed, altered, transported and distorted are covered.

Lecture 3 hours.

## Division of Engineering Technology

The degree of Bachelor of Science in Engineering Technology has emerged in progressive schools across the country as a solution to the ever-widening gap between the four-year, science-oriented engineering curricula, and the two-year application-oriented curriculum.

Engineering education in the United States has progressed during the last twenty years from a specialized application-oriented training to a broad education in the fundamental sciences which form the foundations of engineering. As a result of vast technological advances there was a tendency to increase the amount of subject material in the engineering curriculum. However, this forced the credit hour requirements for an engineering degree to unrealistically high values, at which point material that had been a traditional part of engineering curricula was gradually eliminated to keep the graduation requirements within reasonable limits.

For students who intend to go on to employment in an application-oriented industry, the present engineering curricula do not provide either the required depth of specialization or the necessary training in the application of engineering fundamentals to engineering problems of lower sophistication. The technology programs are designed to meet this need.

Thus, the engineering technologist is one whose work area lies within the scope of the engineering field and requires the application of scientific and engineering knowledge and methods together with technical skills that support engineering activities. Thus the occupational area of the technologist is located between the craftsman and the engineer at the end of the spectrum closest to the engineer.

Each candidate for the degree of Bachelor of Science in the field of engineering technology must satisfy the minimum degree requirements of the department selected with respect to English, the sciences, technical subjects, and electives.

Electives fall into three categories: humanities and social science electives, free electives, and technical electives. The College of Engineering has a minimum requirement of 18 credits in the Humanities/Social Sciences area and has established a policy that none of these may be taken under a pass/fail option. If a student wishes to develop a definitive program encompassing a number of courses in an area outside a humanities/social science area, he may do so and petition for approval on an individual basis. Free electives may be chosen from the course offerings of any college at SMU provided concepts which are new to the student form a substantial part of the course. The technical electives are usually chosen from the courses offered in the student's major department. Courses in the area of mathematics, science or other engineering departments may also qualify as technical electives subject to approval by the student's major department.

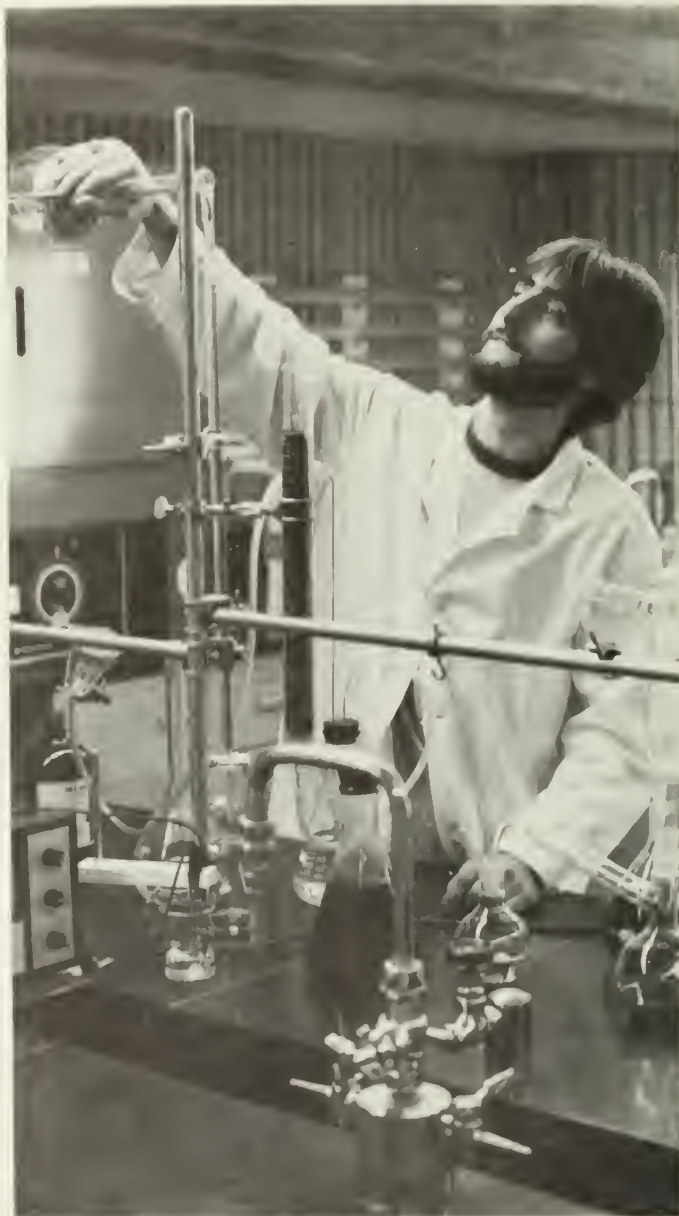
## Civil Engineering Technology

**Dr. Sat Dev Khanna** (chairperson)  
(See faculty listing under Civil Engineering)

Civil Engineering Technology encompasses the methods employed to construct and the techniques used to manage the construction of bridges, buildings, tunnels, dams, harbors, airports, railways, highways, drainage and water supply systems, and sewage and waste systems. Civil Engineering Technologists are the specialists who translate the ideas of the engineers and architects into reality.

The Civil Engineering Technology curriculum at SMU is designed to provide the student with an in-depth training in the methods of construction and the techniques of construction management — a training which will allow him to enter any area of the construction industry upon graduation. The curriculum is also designed to provide the student with a basic mathematics and applied science background which gives him a base upon which he can build if he desires to enter any other field of technology. To better prepare the student to take his place as a citizen as well as a specialist in engineering technology, the curriculum is also designed to include a number of courses in the humanities and social sciences.

Early contact with actual construction projects is encouraged by providing opportunities for the student to participate in field trips to facilities presently under construction. The program is accredited by ECPD.





**Civil Engineering Technology**  
(Existing program up to  
graduating class of 1979)

First Year				Semester Credits: First		Second
E	101	102	Freshman English I, II	3		3
PH	107	108	Basic Physics I, II	3		3
PH	103	104	General Physics Lab I, II	1		1
CH	151	152	Principles of Modern Chemistry	3		3
MA	105	106	Technical Calculus I, II	3		3
TM	101	102	Graphics I, II	2		2
				15		15
Second Year				Semester Credits: First		Second
CT	211		Elements of Surveying	3		
CT	221		Elements of Surveying Laboratory	1		
CS	261		Principles of Computer Programming	3		
TM	231	232	Mechanics I, II	3		3
MA	203		Technical Calculus III	3		
CT	212		Surveying Practice			3
CT	214		Surveying Practice Lab			1
CT	222		Materials of Construction			3
CT	232		Materials of Construction Lab			1
MA	204		Differential Equations			3
				3		3
				16		17
Third Year				Semester Credits: First		Second
CT	311		Strength of Materials	3		
CT	321		Strength of Materials Laboratory	1		
CT	323		Basic Soil Mechanics	3		
CT	333		Basic Soil Mechanics Laboratory	1		
ET	221		Elements of Electrical Engineering I	1		
ET	251		Elements of Electrical Engineering Lab I	1		
CT	302		Engineering Construction I			3
CT	312		Structural Analysis and Design			3
CT	332		Basic Hydraulics			3
CT	312		Basic Hydraulics Laboratory			1
						3
				3		3
				15		16
Fourth Year				Semester Credits: First		Second
CT	401		Engineering Construction II	3		
CT	411		Engineering Construction Lab II	1		
CT	403		Construction Contracts and Specifications	3		
CT	421		Utility Systems	3		
CT	431		Structural Analysis and Design II	3		
CT	402		Engineering Construction III			3
CT	412		Engineering Construction Lab III			1
CT	404		Basic Engineering Economy			3
CT	491		Project			3
						3
				3		3
				16		16
Total Credits - 126						

**Civil Engineering Technology**  
**(Starting freshman entering**  
**class of 1976 - graduating**  
**class of 1980)**

First Year				Semester Credits: First	Second
E	101	102	Freshman English I, II	3	3
PH	107	108	Basic Physics I, II	3	3
PH	103	104	General Physics Lab I, II	1	1
CH	101		General Chemistry	3	
CS	261		Principles of Computer Programming		3
MA	105	106	Technical Calculus I, II	3	3
TM	101	102	Graphics I, II	2	2
				15	15

Second Year				Semester Credits: First	Second
CE	201		Elements of Surveying	3	
CE	211		Elements of Surveying Lab	1	
CT	222		Materials of Construction	3	
CT	232		Materials of Construction Lab	1	
TM	231	232	Mechanics I, II	3	3
MA	203		Technical Calculus III	3	
CT	212		Surveying Practice		3
CT	214		Surveying Practice Lab		1
CT	332		Basic Hydraulics		3
CT	342		Basic Hydraulics Lab		1
MA	204		Differential Equations		3
				3	3
				17	17

Third Year				Semester Credits: First	Second
CT	311		Strength of Materials	3	
CT	321		Strength of Materials Lab	1	
ET	221		Elements of Electrical Engineering I	3	
ET	251		Elements of Electrical Engineering II	1	
CT	403		Construction Contracts and Specifications	3	
CT	302		Engineering Construction I		3
CT	303		Engineering Construction Lab I		1
CT	323		Basic Soil Mechanics		3
CT	333		Basic Soil Mechanics Lab I		1
CT	312		Structural Analysis and Design I		3
				Free Elective	
				3	
				3	3
				17	14

Fourth Year				Semester Credits: First	Second
CT	401		Engineering Construction II	3	
CT	411		Engineering Construction Lab II	1	
CE	402		Engineering Economy	3	
CT	421		Utility Systems	3	
CT	431		Structural Analysis and Design II	3	
CT	402		Engineering Construction III		3
CT	412		Engineering Construction Lab III		1
				Free Electives	
					6
				Technical Elective or Project CT 491	
					3
				Humanities/Social Science Electives	
				3	3
Total Credits - 127				16	16

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**Civil Engineering Technology Courses**

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**CE 201 • 3 credits**  
**Elements of Surveying**

A study of the theory and practice of plane surveying as applied to property, topographic and engineering surveys including curves, error theory and earth-work as related to Civil Engineering projects.  
3 hrs. recitation  
Prerequisite: MA 106

**CT 211 • 1 credit**  
**Elements of Surveying Laboratory**

Consists of field practice to understand and supplement the CE 201 course contents.  
3 hrs. laboratory  
Prerequisite: CE 201 (concurrent).

**CT 212 • 3 credits**  
**Surveying Practice**

The basic principles of control surveys, state plans coordinate systems, field astronomy, curve and volume computations are studied.  
3 hrs. recitation  
Prerequisite: CE 201

**CT 214 • 1 credit**  
**Surveying Practice Laboratory**

Consists of field practice to understand and supplement the CT 212 course contents.  
3 hrs. laboratory  
Prerequisite: CT 212 (concurrent).

**CT 222 • 3 credits**  
**Materials of Construction**

Mechanical, physical, and relevant chemical properties of the principal materials of construction are discussed including mineral aggregates, concrete, mortar, gypsum and lime products, structural clay products, building stone, lumber and

timber, structural steel and structural aluminum.  
3 hrs. recitation  
Prerequisite: CH 101.

**CT 232 • 1 credit**  
**Materials of Construction Laboratory**

A series of laboratory experiments on various type of construction materials - supplement to CT 222.  
3 hrs. laboratory  
Prerequisite: CT 222 (concurrent).

**CT 302 • 3 credits**  
**Engineering Construction I**

Basics of construction estimating and techniques. Techniques of construction, equipment selection procedures, estimating and pricing labor, materials and equipment for problems in earth-work, concrete, steel, wood-work, waterproofing, roofing, plaster, drywall, glass and plastics, etc. are studied. Emphasis is on basic techniques as they relate to construction. The student will determine methods and develop an estimate for a construction project.

**CT 303 • 1 credit**  
**Engineering Construction Laboratory**

This course is an extension of CT 302. Engineering Construction I and involves field trips and practical demonstration of the subject material covered in CT 302.  
Laboratory 3 hours.

**CT 311 • 3 credits**  
**Strength of Materials**

The relationship between stress and strain and the methods of determining the internal stress in a member due to axial load, torsion, bending moments, shear and combined loads are discussed  
3 hrs. recitation  
Prerequisite: TM 231

**CT 312 • 3 credits**  
**Structural Analysis and Design I**

The design analysis of beams, columns and connections in steel and timber is discussed with special emphasis on the analysis and design of formwork, staging and bracing systems. The design of shoring and sheet piling are also discussed.  
Prerequisite: CT 311

**CT 321 • 1 credit**  
**Strength of Materials Laboratory**

A series of laboratory experiments are conducted to investigate the physical characteristics of materials and to verify the assumptions made in the course Strength of Materials (CT 311).  
Prerequisite: Concurrent CT 311.

**CT 323 • 3 credits**  
**Basic Soil Mechanics**

Elementary geology, physical and mechanical properties of soil, weight-volume relationship, compaction, site exploration and soil sampling, Darcy's Law, Elementary principles of shearing strength and consolidation, Rankine pressures, maintenance and inspection of earth structures are studied.  
3 hrs. recitation  
Prerequisite: CT 311, CT 332.

**CT 332 • 3 credits**  
**Basic Hydraulics**

An introductory course in properties of incompressible fluids, fluid statics and fluid kinematics, metering, design of open channels and closed pipes  
3 hrs. recitation  
Prerequisite: MA 107, MA 204



**CT 333 • 1 credit**  
**Basic Soil Mechanics Laboratory**

A series of laboratory experiments conducted to supplement the theory course CT 323 by actual experiments in testing of various types of soils  
3 hrs. laboratory  
Prerequisite: CT 323 concurrently

**CT 343 • 1 credit**  
**Basic Hydraulics Laboratory**

A series of laboratory experiments aimed at supplementing the theory course CT 332 with the objective of initiating the student into the field of simple fluid observation and experimentation  
3 hrs. laboratory  
Prerequisite: CT 332 concurrently

**CT 401 • 3 credits**  
**Engineering Construction II**  
Heavy Construction Engineering  
Heavy construction techniques are studied with an emphasis on engineering considerations. Topics studied include piling, and deep foundation techniques, concrete placement techniques, formwork design for walls, slabs, columns, beams and other conditions, earthwork techniques including compaction and surcharging, pumping and dewatering systems techniques and design, tunneling systems and utilization of compressed air systems. Costs and other economic considerations are examined.  
3 hrs. lecture  
Prerequisite: CT 302, CT 312

**CT 402 • 3 credits**  
**Engineering Construction III**

Advanced Construction Control Systems. Methods and techniques of planning, programming, scheduling and controlling construction operations and complete projects and concepts of networking techniques are examined and integrated. Time/cost/quality control systems are studied with respect to both manual and computer based applications. As a laboratory project the student plans, schedules, and establishes a control system for a construction job.  
3 hrs. lecture  
Prerequisite: CT 401, CS 261

**CT 403 • 3 credits**  
**Construction Contracts and Specifications**

The business, legal and professional relations in engineering construction are discussed. Included are the fundamentals of business law, types of construction contracts and bidding procedure, construction insurance, and specification writing. Construction contract conditions and provisions are examined and elements of procurement practice studied in detail. Enrollment limited to construction technology seniors.  
3 hrs. lecture  
Prerequisite: CT 212, CT 222

**CE 402 • 3 credits**  
**Basic Engineering Economy**

The basic principles and techniques employed in economic decision making between engineering alternatives are studied. Special topics in break-even analysis and benefit-cost analysis are introduced. Enrollment is limited to construction technology seniors.  
3 hrs. lecture

**CT 411 • 1 credit**  
**Engineering Construction II Laboratory**

This course is an extension of CT 401, Engineering Construction II, and involves field trips and practical demonstrations of the subject material covered in CT 401.  
3 hrs. laboratory  
Prerequisite: CT 401

**CT 412 • 1 credit**  
**Engineering Construction III Laboratory**

This course is an extension of CT 402, Engineering Construction III, and involves field trips and practical demonstrations of the subject material covered in CT 402.  
3 hrs. laboratory  
Prerequisite: CT 402 (concurrent).

**CT 421 • 3 credits**  
**Utility Systems**

The interrelationship between structural and heating, ventilating, air conditioning and electrical systems is examined. Factors influencing the selection and sizing of utility equipment are also discussed.  
Prerequisite: CT 211, CT 332, CT 312.

**CT 431 • 3 credits**  
**Structural Analysis and Design II**

The standard methods of structural analysis and design of reinforced concrete beams, columns and slabs are discussed together with the methods of structural analysis usually employed to analyze reinforced concrete structures.  
Prerequisite: CT 312

**CT 491 • 3 credits**  
**Project**

a. Project course to be taken only by students with senior status.  
b. Project must be approved by the C.E. Department and an outline of the project must be supplied to the C.E. Department within six weeks of the beginning of the project semester.  
c. If the project is not approved by the C.E. Department, the credits acquired may not be applied toward graduation credits.

# Electrical Engineering Technology

**Lenine Gonsalves** (chairperson)  
(See faculty listings under Electrical Engineering)

The prime objective of the Electrical Engineering Technology program is to provide the student with a practical design experience so that upon graduation he may successfully pursue a career as an electronic technologist. The senior design project is the ingredient in this program which is most necessary to the achievement of this objective. It requires a laboratory design of an electronic component which is the

culmination of a study conducted by the student working as a member of a small team. This affords the student the opportunity to bring to bear, on a practical design problem, the many tools and techniques which he has developed throughout his college years.

The laboratory approach is stressed in this program, demonstration experiments are conducted in the classroom to supplement each of the junior and senior level courses. The incorporation of current indus-

trial techniques, which is an integral part of this program, is assured through the use of lecturers from nearby industrial organizations.

The Electrical Engineering Technology program is nationally accredited by the Engineers Council for Professional Development (ECPD) and students may associate with their chosen profession by joining the Student Chapter of The Institute of Electrical and Electronic Engineers (IEEE).

## Requirements

First Year			Electrical Engineering Technology Program		Semester Credits:		First	Second
E	101	102	Freshman English				3	3
PH	107	108	Basic Physics I, II				3	3
PH	103	104	General Physics Lab I, II				1	1
CH	101		General Chemistry I				3	
MA	105	106	Technical Calculus I, II				3	3
TM	101	102	Graphics I, II				2	2
ET	221		Electric Circuits I					3
							15	15
Second Year					Semester Credits:		First	Second
TM	231	232	Mechanics I, II				3	3
MA	203		Technical Calculus II				3	
MA	204		Differential Equations					3
TM	222		Materials Science					3
ET	222		Electric Circuits II				3	
ET	251	252	ET Lab I, II				1	1
CS	261		Principles of Computer Programming				3	
ET	212		Electronics I					3
							3	3
							16	16
Third Year					Semester Credits:		First	Second
ET	315		Instrumentation				3	
ET	321	322	Circuit Analysis and Design I, II				3	3
ET	341		Electromechanical Energy Conversion				3	
ET	332		Transmission Lines					3
EE	361		Digital Logic and Design					3
ET	311	312	Electronics II, III				3	3
ET	351	352	ET Lab III, IV				1	1
							3	3
							16	16

## Fourth Year

ET 451	452	Design Project I, II
ET 472		Applied Communications
ET 485		Feedback Controls
		Technical Electives
		Free Electives
		Humanities/Social Science Electives

## Semester Credits: First Second

3	3
3	
	3
3	3
3	3
3	3
15	15

### Electrical Engineering Technology Courses

#### ET 206 • 3 credits

##### Applied Differential Equations

Many important problems in engineering are represented by linear differential equations. It is the purpose of this course to present an engineering approach to the study of differential equations. Various mathematical properties will be related to physical properties in engineering systems, such as electric circuits, mechanical systems, hydraulic systems, heat flow systems, and structural systems. Laplace transform methods of system analysis will be introduced. Laboratory and problem solving sessions are an integral part of this course.

3 hrs. lecture

Prerequisite: Integral and Differential Calculus.

#### ET 221, 222 • 3 credits each

##### Electric Circuits I, II

Basic A-C and D-C circuits, Kirchhoff's laws, loop and nodal analysis, Thevenin's and Norton's theorems, and sinusoidal steady state solutions.

3 hrs. lecture per semester

Prerequisite: MA 203, MA 204 - taken concurrently.

#### ET 251, 252 • 1 credit each

##### Electrical Technology Laboratory I, II

This laboratory sequence introduces the theory and techniques of electrical measurement. D.C. and A.C. indicating instruments and the operation and use of the oscilloscope are covered in the

first part of the course. Experiments will relate to course work in ET 221 and ET 222.

3 hrs. laboratory per semester

Prerequisite: ET 221, 222 - taken concurrently.

#### ET 311, 312 • 3 credits each

##### Electronics I, II

The operating principles and applications of semiconductor devices - diodes, transistors, SCR's, FET's, OpAmps - are discussed. Graphical techniques and device models are developed and utilized in the analysis and design of electronic circuits such as power supplies, voltage regulators, amplifiers, waveform generators, and active filters.

3 hrs. lecture per semester

Prerequisite: ET 222

#### ET 315 • 3 credits

##### Instrumentation

Analysis of the operational characteristics of meters, oscilloscopes, spectrum analyzers, etc. will be discussed. Particular attention will be paid to the specification of these devices and to the analysis of the results of using them in engineering measurements and instrumentation.

3 hrs. lecture

Prerequisite: ET 222

#### ET 321, 322 • 3 credits each

##### Circuit Analysis and Design I, II

Network topology, transient analysis, Laplace transform, filters, and computer techniques as applied to circuits.

3 hrs. lecture per semester

Prerequisite: ET 222, CS 261

#### ET 332 • 3 credits

##### Transmission Lines and Waves

This course begins with techniques for the calculation of capacitance, inductance, voltage breakdown, skin depth and demagnetizing fields. Wave propagation in free space is discussed and guided propagation via transmission lines is studied in detail. Subjects include standing waves, reflections, VSWR, impedance matching and the Smith Chart. The final subject area covered in this course is antenna theory and design. Gain, beamwidth, radiation resistance and effective area are explained. Various antenna configurations are discussed and analyzed.

3 hrs. lecture

Prerequisite: PH 102, MA 204.

#### ET 341 • 3 credits

##### Electromechanical Energy Conversion

This course covers essentially the basics of electromechanics as applied to energy conversion devices, followed by studies of specific devices such as dynamos and other transducers, including transformers. Mathematical models of typical physical devices are discussed.

3 hrs. lecture

Prerequisite: ET 222

#### ET 351, 352 • 1 credit each

##### Electrical Technology Lab III, IV

This laboratory sequence will coordinate with the course work of the junior year. Emphasis will be on the investigation of non-

linear device characteristics and response.

3 hrs. lab per semester

Prerequisite: ET 222

**ET 415 • 3 credits**

**Digital Devices and Systems I**

Study of modern integrated logic circuits. Detailed electronic circuit analysis of single gates, using primarily the Transistor-Transistor-Logic (TTL) configuration. Use of these gates in the implementation of complex logic functions. Examples of medium and large scale integrated logic circuits (MSI and LSI), including a study of Flip-Flops from the simple Latch through Master-Slave types. Arithmetic Logic Units and Memory systems.

3 hrs. lecture

Prerequisite: College level two-semester Electronics course.

**ET 416 • 3 credits**

**Digital Devices and Systems II**

Construction, analysis and operation of the discrete and integrated FET. Study of the basic gate in MOS, CMOS and SOS technology. Configuration and application of MSI circuitry, such as Flip Flops, Shift Registers, Scalars, Counters, etc. Examples of LSI circuitry, such as fixed and variable format, programmable and nonprogrammable memory systems.

3 hrs. lecture

Prerequisite: ET 415

**ET 431 • 3 credits**

**Microwave Theory and Techniques**

Guided transmission of electromagnetic waves by means of coaxial and waveguide systems. Transmission line theory and the Smith chart. The design of cavities, couplers, filters and attenuators. Microwave generation, detection and measure-

ments. Fundamentals of microwave antennas, ferrite devices and semiconductor components.

3 hrs. lecture

Prerequisite: ET 332

**ET 432 • 3 credits**

**Microwave Electronics**

A study of the microwave properties of ferrite and semiconductor materials and their applications to circulators, isolators, parametric amplifiers, multipliers, switches and phase changers. Klystrons, magnetrons and traveling wave tubes are also studied.

3 hrs. lecture

Prerequisite: ET 431

**ET 451 • 3 credits**

**Design Project I**

Introduces the student to well-structured projects in the laboratory. The course consists of design projects and experiments of one to three weeks duration in the areas of digital electronics and microwaves, and will challenge the student to use the material learned in his other courses.

1 hr. lecture, 6 hrs. laboratory.

Prerequisite: Senior standing.

**ET 452 • 3 credits**

**Design Project II**

A continuation of ET 451 with more emphasis on self-reliance. The course will consist of comprehensive laboratory design projects and experiments and will be as closely related to industrial experience as possible.

1 hr. lecture, 6 hrs. laboratory.

Prerequisite: Senior standing.

**ET 462 • 3 credits**

**Audio Engineering**

Audio signals, noise, and distortion. Recording and amplifying systems, transducers, sound measurements and noise control.

3 hrs. lecture

Prerequisite: Senior standing.

**ET 472 • 3 credits**

**Applied Communication**

Modulation, demodulation, sampling and multiplying are discussed. Random-signal analysis is presented, and a survey of various digital communication systems is included.

3 hrs. lecture

Prerequisite: ET 312

**ET 485 • 3 credits**

**Feedback Controls**

Electrical-mechanical system characterization, basic principles of feedback design, control system components, introduction to frequency response methods.

3 hrs. lecture

Prerequisite: ET 312 and ET 322.



# Mechanical Engineering Technology

**Ronald DiPippo** (chairperson)  
(See faculty listing under  
Mechanical Engineering)

Mechanical Engineering Technology encompasses the methods that are employed as well as the practice that is applied in the design, development, manufacture, operation and installation of machinery, boilers, structures, transportation equipment, heating and air-conditioning equipment as well as other equipment which involves the interaction of mechanical, electrical, fluid, and thermodynamic forces. Mechanical technologists not only translate the ideas of the engineers and scientists into reality but they also bring to the technological team a knowledge of practical production techniques. In industry, the mechanical technologist is frequently found in a supervisory position over technicians and draftsmen. Employment opportunities are with engineering design organi-

zations, with public utilities, and with corporations dealing with manufacturing and production.

In addition to fundamental mechanical technology courses, the curriculum at SMU contains courses in mathematics, science, humanities and social sciences in order to better prepare the student to assume a productive role in society upon graduation. During the first year, students develop the skill to produce production drawings by taking two courses in Graphics. The concentration in the second and third year is on basic mechanical engineering subjects whereas the fourth year is highlighted by a sequence of two courses in Machine Design which is complemented by an Engineering Technology Design Project course.

Students are encouraged to join and to participate in professional engineering organization activi-

ties and are offered early contact with practical problems through field trips to industrial concerns.

The Mechanical Engineering Technology curriculum is fully accredited by the Engineers Council for Professional Development. A student chapter of the American Society of Mechanical Engineers exists at SMU to allow the students to begin their contacts with the professional society of practicing engineers and technologists.

## Requirements

First Year				Semester Credits	First	Second
TM	101	102	Graphics I, II		2	2
MA	105	106	Technical Calculus I, II		3	3
PH	107	108	Basic Physics I, II		3	3
PH	103	104	Basic Physics Laboratory I, II		1	1
E	101	102	Freshman English I, II		3	3
CH	101		General Chemistry I		3	
CS	261		Principles of Computer Programming			3
					15	15
Second Year				Semester Credits	First	Second
MA	203		Technical Calculus III		3	
TM	217	218	Manufacturing Laboratory I, II		1	1
TM	219	220	Manufacturing Processes I, II		3	3
TM	231	232	Mechanics I, II		3	3
			Humanities/Social Science Electives		6	3
TM	222		Elements of Materials Science			3
TM	223		Elements of Materials Science Laboratory			1
MA	204		Differential Equations			3
					16	17

Third Year			Semester Credits	First	Second
TM	302	Kinematic Analysis of Machines		3	
ET	221 222	Electric Circuits I, II		3	3
ET	251 252	Electrical Technology Laboratory I, II		1	1
TM	306 307	Mechanics of Materials I, II		3	3
TM	321 322	Thermodynamics I, II		3	3
TM	342 343	Mechanical Technology Laboratory I, II		1	1
		Humanities/Social Science Electives		3	3
TM	332	Fluid Mechanics			3
				17	17
Fourth Year			Semester Credits	First	Second
TM	412	Instrumentation and Control Circuits		3	
TM	432	Dynamic Analysis of Machines		3	
TM	422 423	Machine Design I, II		3	3
		Technical Electives		3	6
		Humanities/Social Science Elective*		3	
TM	424	Mechanical Technology Design Projects			3
		Free Elective			3
				15	15

\*May be taken during either first or second semester, alternating with a Technical Elective, retaining 15 credits each semester.

#### Technical Electives

TM	411	Heat Transfer
TM	414	Heat Exchanger Design
TM	431	Internal Combustion Engines
TM	445	Photoelasticity with Laser Applications
TM	456	Special Topics in Structural Analysis
TM	496	Directed Study
IT	310	Process Analysis and Planning
IT	403	Tool Engineering
IT	411	Facilities Planning

Any Mechanical Engineering technical elective course may be used as a technical elective for the technology program. Students must obtain prior approval to register for an ME elective from the instructor of the course, except for the following courses for which no prior approval is necessary:

ME	462	Experimental Stress Analysis
ME	471	Physical Metallurgy
ME	472	Metal Forming Operations

Students who wish to select technical electives from other departments must receive prior approval from the Mechanical Engineering Department.

# Mechanical Engineering Technology/Industrial Arts Option

The Mechanical Engineering Department offers a program within its Mechanical Engineering Technology curriculum that allows students to prepare themselves for a teaching career in the area of Industrial Arts. The option calls for a sequence of courses in the Education Department,

along with the bulk of courses taken in the normal Mechanical Engineering Technology program. The program is designed to allow the student to meet the requirements for certification for Industrial Arts teachers in the Commonwealth of Massachusetts.

The first year of the option is identical with that for the normal Mechanical Engineering Technology program. The remaining three (3) years are described below.

## Requirements

Second Year			Semester Credits:	First	Second
CS 261		Principles of Computer Programming		3	
MA 203		Technical Calculus III		3	
ED 201		Philosophy of Education		3	
TM 217	218	Manufacturing Laboratory I, II		1	1
TM 219	220	Manufacturing Processes I, II		3	3
TM 231	232	Mechanics I, II		3	3
ED 205		Human Learning and Development			3
TM 222		Elements of Materials Science			3
TM 223		Elements of Materials Science Laboratory			1
MA 204		Differential Equations			3
				16	17
Third Year			Semester Credits:	First	Second
TM 302		Kinematic Analysis of Machines		3	
ED 306		Curriculum Development in the Secondary School		3	
ET 221	222	Electric Circuits I, II		3	3
ET 251	252	Electrical Technology Laboratory I, II		1	1
TM 306	307	Mechanics of Materials I, II		3	3
TM 321	322	Thermodynamics I, II		3	3
TM 342	343	Mechanical Technology Laboratory I, II		1	1
ED 307		Teaching Methods in the Secondary School			3
TM 332		Fluid Mechanics			3
				17	17
ED 415		Internship in Teaching (at end of spring semester)		6	
Fourth Year			Semester Credits:	First	Second
TM 412		Instrumentation and Control Circuits		3	
TM 432		Dynamic Analysis of Machines		3	
TM 422	423	Machine Design I, II		3	3
		Humanities/Social Science Electives		3	3
		Education Electives		3	3
TM 424		Mechanical Technology Design Projects			3
		Technical Elective			3
				15	15

## Education Electives

ED 210	History of Education
ED 365	Guidance and Counseling in American Education
ED 402	Tests and Measurements
ED 403	Applied Aesthetics for the Classroom

# Mechanical Engineering Technology/Industrial Technology Option

Students enrolled in the Mechanical Engineering Technology program who wish to stress the industrial applications of their technical course work may fashion a program to suit their needs by proper selection of electives.

All required technical courses for this option are identical to those for the Mechanical Engineering Technology degree.

In lieu of two (2) unspecified Humanities/Social Science electives, students in this option

should select two courses from the following list:

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BA	311	Legal Framework of Business
MN	341	Production Management
MN	342	Time and Motion Study
MN	395	Managerial Psychology
MN	461	Industrial Management

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Students in this option should utilize their three (3) Technical Electives for the following courses:

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IT	310	Process Analysis and Planning
IT	403	Tool Engineering
IT	411	Facilities Planning

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In addition it is recommended that the one (1) Free Elective be reserved for: MA 231, Elementary Statistics.

Proper attention should be paid to meeting prerequisites (where required) and/or obtaining the permission of the course instructor for courses outside the Mechanical Engineering Department.

Finally it is important to note that students in this option must select their four (4) Humanities/Social Sciences courses such that two (2) are in one area of Humanities and two (2) are in one area of Social Science.

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## Mechanical Engineering Technology Courses

### TM 101 • 2 credits Graphics I

A study of the principles of orthographic projection; instrument and freehand execution of multi-view drawing, auxiliary, sectional views, pictorial drawing and lettering. Introduction to dimensioning, fasteners, detail and assembly drawing, graphical mathematics, empirical equations, graphical calculus, and nomography are also covered. Lecture 2 hours, laboratory 4 hours.

### TM 102 • 2 credits Graphics II

A course in the graphical solution of problems involving space distances and relationships including auxiliary views, point line and plane relationships, method of revolution, curved surface intersections and developments, vector applications and mining applications. Lecture 2 hours, laboratory 4 hours.  
Prerequisite: TM 101

### TM 201 • 3 credits Manufacturing Technology

The acquisition of skills and knowledge in modern manufacturing methods is encouraged from both a recreational and utilitarian point of view. Lectures, films and discussions are used to acquaint the student with the production of various items and demonstrate how to best use the resources of one's home, school and community in one's work. Shop experience is given in areas that are useful to the



laboratory scientist, artist, hobbyist and those whose work may require a knowledge of manufacturing. Machine tool operations, work bench techniques, welding and other practical metal-working and forming processes are included. Lecture 2 hours, laboratory 2 hours

**TM 217, 218 • 1 credit each**  
**Manufacturing Laboratory I, II**  
Laboratory work and machine shop practice are carried out to supplement and reinforce the text material in TM 219, 220. Laboratory 3 hours

**TM 219, 220 • 3 credits each**  
**Manufacturing Processes I, II**  
A study of materials, processes and equipment used in manufacturing to convert ideas into products, machines and structures economically. Topics include turning and threading operations, cold and hot working processes, milling, flame cutting, welding, numerical control of machine operations, jigs and fixtures, powder metallurgy and non-traditional machining processes. Lecture 3 hours.

**TM 222 • 3 credits**  
**Elements of Materials Science**  
This course covers the engineering requirements of materials including atomic arrangements and atomic bonding, structural imperfections: metallic, organic and ceramic phases and their properties. Phase relationships, solid state reactions and modifications of properties through structural changes and stability of materials in service environment are also covered. Lecture 3 hours

**TM 223 • 1 credit**  
**Elements of Materials Science**  
For students in Mechanical Engineering Technology. Laboratory 3 hours.

**TM 231 • 3 credits**  
**Mechanics I**  
A course in the study of statics of particles and of rigid bodies in two and three dimensions; resultants and equilibrium of forces; centroids and centers of gravity; forces in beams and cables; analysis of structures; friction, moments of inertia of areas and masses. The vector method for the solution of problems is used where applicable. Lecture 3 hours.  
Prerequisite: PH 107

**TM 232 • 3 credits**  
**Mechanics II**  
Kinematics and kinetics of particles and of rigid bodies, rectilinear and curvilinear motion, translation, rotation, plane motion; force, mass and acceleration, work-energy, impulse and momentum; consideration of three dimensional problems is given in this course. Methods of vector algebra are used in solution of problems where applicable. Lecture 3 hours.  
Prerequisite: TM 231

**TM 302 • 3 credits**  
**Kinematic Analysis of Machines**  
Analysis of the relative motion of machine parts to determine displacement, velocity and acceleration are studied. Topics covered include equations of motion, instant centers of velocity, velocity and acceleration graphs and polygons, cams, rolling contact, gearing, flexible connectors, gear trains, transmissions, screws and dimensional synthesis.

Lecture 2 hours, laboratory 3 hours  
Prerequisite: TM 232

**TM 306, 307 • 3 credits each**  
**Mechanics of Materials I, II**  
A study of the stresses and strains that occur due to tensile, compression and shearing forces. Shear and bending moment diagrams, investigation and design of beams, and deflection of beams are included. Statistically indeterminate members, eccentrically applied load, torsion, and column action are also studied. Lecture 3 hours.  
Prerequisite: TM 231

**TM 321, 322 • 3 credits each**  
**Thermodynamics I, II**  
Properties of substances, First and Second laws of thermodynamics; ideal gases; liquids and vapors; heat exchangers; steam turbines; and the reversed cycle, are topics included in the course. Lecture 3 hours.  
Prerequisite: MA 203

**TM 332 • 3 credits**  
**Fluid Mechanics**  
This course covers hydrostatics and hydrodynamics; ideal viscous fluids; compressible and incompressible fluids; flow of real fluids in pipes and around immersed objects, boundary layer, lift and drag, flow measurement. Lecture 3 hours.  
Prerequisite: TM 321

**TM 342, 343 • 1 credit each**  
**Mechanical Technology Laboratory I, II**  
A basic laboratory course designed to familiarize the student with basic definitions, physical concepts and testing procedures. The first portion is devoted to experiments in strength

of materials and general techniques of mechanical testing of materials. The second portion concentrates on measurements in heat/power and fluid flow. Throughout emphasis is placed on the proper presentation and interpretation of data. Laboratory 3 hours.

**TM 411 • 3 credits**  
**Heat Transfer**  
This course contains a study of steady state conduction; free and forced convection; radiant heat transmission; and the design of heat transfer equipment. Lecture 3 hours.  
Prerequisite: TM 322

**TM 412 • 3 credits**  
**Instrumentation and Control Circuits**  
Analysis and design of operational circuitry and measurement of non-electrical quantities, and the study of transducers contribute the basis for this course. Lecture 3 hours.  
Prerequisite: ET 222

**TM 414 • 3 credits**  
**Heat Exchanger Design**  
Following a general description of heat transfer devices, the following topics are presented: heat exchanger performance analysis and design procedure; heat transfer surface analysis; importance of various design parameters and optimization processes; geometrical configurations of various heat exchangers; specific applications of various heat exchangers with temperature dependent fluid properties; flow nonuniformity on the performance of heat exchangers; heat exchanger tests. Lecture 3 hours.  
Prerequisite: TM 411

**TM 422 • 3 credits****Machine Design I**

A survey of the methods, simplified and sophisticated, which can be applied in the broad field of mechanical equipment design. Presentation of the subject matter, whenever possible, features the distinction between the levels of sophistication appropriate for a given design situation. In assignments, the student is encouraged to make design decisions which serve to prepare him for the experiences that he is likely to encounter in the design project course, and as an engineer upon graduation. Some of the areas covered are: design procedures, simple stress analysis, varying stresses, stress concentration, combined stresses, design of fasteners and springs. Lecture 3 hours. Prerequisite: TM 307

**TM 423 • 3 credits****Machine Design II**

A continuation of Machine Design I. Areas covered include lubrication; sliding and rolling contact bearings; shaft design; gear design; flexible connectors and clutches. Lecture 3 hours. Prerequisite: TM 422

**TM 424 • 3 credits****Mechanical Technology Design Projects**

The student will propose a special design project and upon approval will pursue his investigation of the chosen problem. Investigation and creativity are encouraged in the design process. A final report with recommendations and specifications will be submitted at the conclusion of the course. Lecture 1 hour, laboratory 6 hours. Prerequisite: TM 423 concurrently

**TM 431 • 3 credits****Internal Combustion Engines**

A study of the internal combustion engine processes, including the air standard cycle analysis, engine cycles; deviation of the real engine from the ideal engine; detonation; carburetion; fuel injection; combustion chamber and cylinder head design; engine lubrication; cooling; and performance. Lecture 3 hours. Prerequisite: TM 322

**TM 432 • 3 credits****Dynamic Analysis of Machines**

The course covers the fundamental principles of dynamics of machines. Topics covered include: static forces in machines; inertia forces in machines; flywheels; balancing rotating and reciprocating masses; gyroscopic effects; critical speeds of shafts and the determination of natural frequencies and mode shapes of multi-degree of freedom systems. A weekly laboratory session involves experiments dealing with balancing, resonance, analog computer simulation, sound measurements and digital computer techniques. Lecture 2 hours, laboratory 3 hours. Prerequisite: TM 232

**TM 445 • 3 credits****Photoelasticity with Laser Applications**

The course is divided into two equal parts, photoelasticity and laser applications in engineering. The first part of the course is concerned with polarized light and its use in stress analysis. The student will be introduced to the techniques and instruments used in photoelastic analysis of stressed models. Current use of industrial photoelasticity will be emphasized. Laser applications in engineer-

ing comprise the second half of the course. A review of ray optics, refraction, reflection, and lenses serve as an introduction to laser light properties. This portion is followed by simple demonstrations with the laser. The course concludes with an introduction to holography and current industrial applications. Lecture 3 hours. Prerequisite: TM 307

**TM 456 • 3 credits****Special Topics in Structural Analysis**

The course consists of the analysis of a series of existing problems related to structures in the deep ocean environment. The first quarter of the course will be devoted to review of mechanics of materials. The remaining portion of the course will cover practical problem solving in the area of stress analysis. Emphasis will be placed on introducing the student to the analysis, selection and interpretation of current handbooks and codes, concluding with a design. The techniques introduced and the philosophy of design will be of a general nature, applicable to many areas of concern to Mechanical Engineers or Technologists. Lecture 3 hours. Prerequisite: TM 307

**TM 496 • 3 credits**  
**Directed Study**

A student works under the direction of a faculty member and pursues a specific line of study in an area of interest to the student. The work may deal with subject matter not normally available in the curriculum, or may involve a design project. Lecture/laboratory arranged as required. Prerequisite: Senior standing

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## Industrial Technology Courses

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### **IT 310 • 3 credits**

#### **Process Analysis and Planning**

Beyond the design stage, the development and coordination of plans for manufacturing is called process engineering. This course deals with the problems of determining the principal and specific processing sequence for manufacturing in the hardware industry. Casting or molding, cutting, forming and assembly equipment is selected for the processing sequence after a geometric and functional work-piece analysis has been conducted. Standard equipment, special equipment, and inspection tooling are discussed in detail to facilitate their selection for processing materials into useful products. Selected plant tours reinforce the topic coverage.

Lecture 3 hours.

Prerequisite: TM 220

### **IT 403 • 3 credits**

#### **Tool Engineering**

A study intended to provide a basic understanding of the fundamental force, energy and wear characteristics involved in tool operations as related to the economics of the manufacturing processes. Topics covered include: characteristics of material behavior, metal cutting and forming and manufacturing economics. Design and analysis of the following tools are considered: single-point tools, axial-feed rotary tools; press-working tools including piercing, blanking, compound and progressive dies, and work-holding devices.

Lecture 3 hours.

Prerequisite: Senior standing.

### **IT 411 • 3 credits**

#### **Facilities Planning**

The continuing development of a master plan for production is essential if meaningful progress is to be sustained in manufacturing plants. In Facilities Planning we examine primarily the techniques employed in the resolution of materials handling and equipment layout problems. In addition the contributions of product engineering, method engineering, and production planning and control are considered for their effect on the overall manufacturing master plan.

Lecture 3 hours.

Prerequisite: IT 310



## College of Fine And Applied Arts

(Name to be changed to College  
of Visual and Performing Arts)





The College of Fine and Applied Arts offers undergraduate degree programs leading to the Bachelor of Fine Arts degree in Art Education, Fine Arts, Textile Design and Visual Design and the Bachelor of Arts degree in Art History. In addition, the College offers a program of Visual Design leading to the Master of Fine Arts degree and an Art Education program leading to the Master in Art Education degree.

The undergraduate art programs in the college were restructured during the 1973-74 academic year to provide both a common foundations program for all art program majors and to make the upper division offerings of the college and its departments more flexible and adaptable to the interests and abilities of the art major students. Further restructuring of one section of the Foundation Program provides for students who know that they want to

major in Fine Arts. The offerings in Fine Arts are painting, sculpture, and printmaking. Students choosing to major in Fine Arts will be assigned to an interrelated block of teachers from the Department of Fine Arts, who will give a Foundation section with a Fine Arts bias. Opportunities for study in new studio areas have been provided, and new possibilities for advanced and independent study have been developed in the curriculum.

The undergraduate college presents a professional education in art for the development of a high degree of initial professional competence in the arts for its students. In doing so it offers courses in a wide variety of studio areas as well as supplemental courses in art history to give a broader perspective to the student and his understanding of the role of arts in human experience. In each of the under-



graduate programs a series of courses in the liberal arts is required. These include courses in English and a science, plus elective courses in humanities and social sciences.

The Art History major program includes a spectrum of courses covering the various fields and periods of the history of western art, plus other specialized courses in non-western art.

In addition to its program in the visual arts, the College of Fine and Applied Arts has a music division which presents courses in the history, theory and practice of music. Plans are being formulated for the further development of the music division, and it is expected that the future will see the University offering a diverse program in this area. The college during the 1971-72 academic year offered its first course in the theater arts, and it is hoped

that the future will see the development of both an academic and performance oriented program in the theater arts.

The graduate program in Visual Design is a professionally oriented program designed to develop the individual abilities and interests of the student toward the goal of professional involvement in the field of visual design.

The Art Education Department offers a degree of Master in Art Education which has several components for the in-service art teachers, the fine arts major and the continuing art education major. Particulars of the program can be found in the Graduate Catalog.

### Art Portfolio

Except for art history majors, all applicants for admission to the College of Fine and Applied Arts must submit a portfolio of original art work to be evaluated by a faculty committee relative to acceptance into the various programs of the College. The portfolio requirement is in addition to the normal requirements for admission to the University

### Requirements of the Portfolio

1. The portfolio should consist of no less than ten (10) samples of work and no more than twenty (20). At least five (5) should be two-dimensional, showing strength particularly in the areas of drawing and design. The additional samples may include work in any medium (paint, sculpture, film, crafts, etc.).
2. Each sample must be an original piece of work and not a copy of anyone else's art work.
3. It is recommended that the portfolio be submitted no later than April 15. The College of Fine and Applied Arts has a limit set on the number of new admissions each year. Submission of a portfolio after the April 15 date may cause the Portfolio Review Committee not to consider the applicant if the admissions quota is filled at that time.
4. Slides (35 mm color) may be submitted for review in lieu of original art work when it is impos-

sible to provide the original works for review

5. Portfolios should be brought to the College of Fine and Applied Arts for evaluation on the day scheduled for portfolio review. There will be a brief interview in conjunction with the portfolio evaluation.
6. Appointments for the evaluation must be obtained by calling or writing the secretary of the College of Fine and Applied Arts.
7. When it is not possible for an applicant to visit the campus, portfolios will be accepted by mail. Portfolios submitted by mail must consist of clear 35mm color slides, each legibly identified with the dimensions and medium of the work and the applicant's name. These will be returned if proper mailing address is included.

### Transfer Students

All students transferring from other art schools or junior colleges should submit the following to the Fine Arts Admissions Committee:

1. Notice of year in which they desire to enroll (freshman, sophomore, junior).
2. Transcript of credits from former institutions. (Xerox is permissible).
3. Portfolio of work. If they are applying for admission to sophomore, junior or senior year, they should understand that we will evaluate equivalent competency for their own benefit.
4. The portfolio of work must also be shown to the chairman of the department the student wishes to enter



### Sophomore Review Procedures

During the second semester of the sophomore year, each studio art major is required to present a representative exhibition of his/her work to an appointed committee of art faculty members for review. The purpose of the review is:

To advise each student as to his/her artistic strengths and weaknesses and to aid him/her in the selection of an area of emphasis in his/her art major program.

As a result of the Sophomore Review, the faculty may recommend to the student that he:

1. continue with his planned program of study within the college, or that he
2. switch to another major area within the college to better utilize and develop his artistic aptitudes, or that he
3. withdraw from further study in the college, since, in the view of the faculty, his chances of successfully completing the upper level programs of study are minimal.

In most programs of study within the college, the faculty recommendation of any of the above will be considered just that: a recommendation and is not binding on the student. However, in some programs of study within the college, where faculty and space is limiting, the faculty recommendation becomes acceptance or rejection into the particular program in question.

### Dates of Review

The Sophomore Review will be conducted during two (2) weeks in the spring each year arranged so as not to conflict with an official college vacation period. Exact dates of the review will be posted on the art department bulletin board earlier each spring semester.

### Members of Review Board:

The entire college faculty will take part in the Sophomore Review. They will be assigned to committees of a minimum of three members each. These committees will then serve as individual Board of Review.

Each department or area of study will have the option of composing its review committee.

### Assignment of Review Board:

Each student will be assigned to a review board according to his/her intended major area of concentration.

Procedures:

**Step 1.** The student will complete and return his/her Sophomore Review Application Form to the department chairman at least two (2) weeks prior to the scheduled dates of the Sophomore Review.

**Step 2.** The student will prepare a portfolio of representative works from his/her courses at Southeastern Massachusetts University (and/or other institutions if a transfer student). All works must be original and must have been created during the student's college program. No pre-college work will be accepted for review. All two-dimensional work must be framed or matted. Each student's portfolio should contain the following minimum numbers of work:

- a. six (6) drawings
- b. six (6) problems (2 and 3 D)
- c. four (4) works from a major area of concentration

**Note:** Art Education majors must include a representative paper from a sophomore level Art Education course in addition to above.

Textile Design and Visual Design should place emphasis on design areas. Painting should place emphasis on painting and drawing. Art education may choose from any studio areas of involvement.

**Step 3.** The student shall be assigned to a board of review.

**Step 4.** A master list of the assigned boards of review and scheduled review times will be posted at least one (1) week prior to the schedule dates of review.

**Step 5.** On his/her scheduled time and day of review the student will pursue the following procedures:

- a. Have his/her work set up in an exhibition format in the scheduled area prior to the schedule time of review.
- b. Stay with his/her exhibit for the required time periods and be prepared to respond to questions related to it.
- c. The student will remove all his/her work from the review area.

**Step 6.** The Board of Review will make its recommendation in writing. Copies will be provided for the student, the Dean's office and the departmental advisor.

**Step 7.** Students who did not pass the review will automatically be reviewed by the entire art department faculty.



### **Retention of Student Work**

The College of Fine and Applied Arts maintains the right to retain student class work for teaching and exhibition purposes. Every effort will be made to see that this right is not abused and that it is exercised equitably.

### **Course Prerequisites**

Most courses in the College of Fine and Applied Arts are sequential. As a result, it is necessary that a student complete the appropriate course prerequisites before expecting to register in any course offered by the College. Students will be expected to meet all course prerequisites or their equivalent unless specifically waived of this requirement for a particular course by the chairman of the department in which the course is offered. Students who become erroneously registered for a course for which they have not met the prerequisites will be allowed to continue in the course. Course prerequisites are noted in the catalog course descriptions when appropriate.

### **Studio Credit/Class Hour Requirements**

Studio art courses require three hours of work per week for each hour of credit. In most studio art courses two hours per credit a week are scheduled in class, and the third hour in the individual student's responsibility to complete in addition to the regularly scheduled class time. Courses which require a model or special facilities have the three required hours per credit per week scheduled in class.

### **Advanced Placement**

Credit for equivalent courses will be awarded for grades of three or above. (AP exams are graded on a 1 - 5 scale).

Such credit may be used to satisfy distribution requirements or as elective credits outside the major field of a degree candidate or to allow omission of equivalent SMU courses.

### **Degree Requirements**

To fulfill the requirements for the Bachelor of Fine Arts degree, the student must complete programs of study involving the following total semester credit hours:

Art Education	126
Fine Arts	127
Textile Design	126
Visual Design	126

To fulfill the requirements for the Bachelor of Arts degree, the student must complete programs of study involving the following total semester credit hours:

Art History	123
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Each major program involves at least thirty (30) credit hours of Liberal Arts courses and twelve (12) hours of Art History courses in addition to its major and elective studio courses.

All first year students in the College of Fine and Applied Arts are required to take Freshman English (E 101, E 102) a two semester course in the basic skills of communication, written and spoken, unless specifically exempted by an advanced placement test administered by the department of English.

A science elective (2 courses, 6 credit hours) is required in all programs of the College, and each student is required to complete a minimum number of credit hours of humanities and/or social science electives in all major programs. To meet this

requirement, students normally select courses from both the humanities and social science

### **Cumulative Average Requirements for Graduation**

To be eligible to graduate, the student must have achieved at least a 2.0 cumulative average (C) for his entire program with a minimum of a 2.0 in his major field of study.

### **Requirements for the Masters of Fine Arts Degree**

To fulfill the requirements for the Master of Fine Arts degree, the student must complete a program of studies totaling sixty (60) semester credit hours with at least a 3.0 cumulative average (B) for his entire program. Of the total program six (6) credit hours are devoted to a thesis project in which the student must develop and present a comprehensive problem in visual design which is evaluated according to the highest professional criteria



# Foundation Program

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## Faculty and Fields of Interest

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**Elaine Fisher** • photographer

**Elleda Katan** (coordinator)  
• art educator, mixed media

**Georgette Macafee** • painter

**Anthony Miraglia** • painter

**Steven Plumhoff** • sculptor

**James Toatley** • sculptor

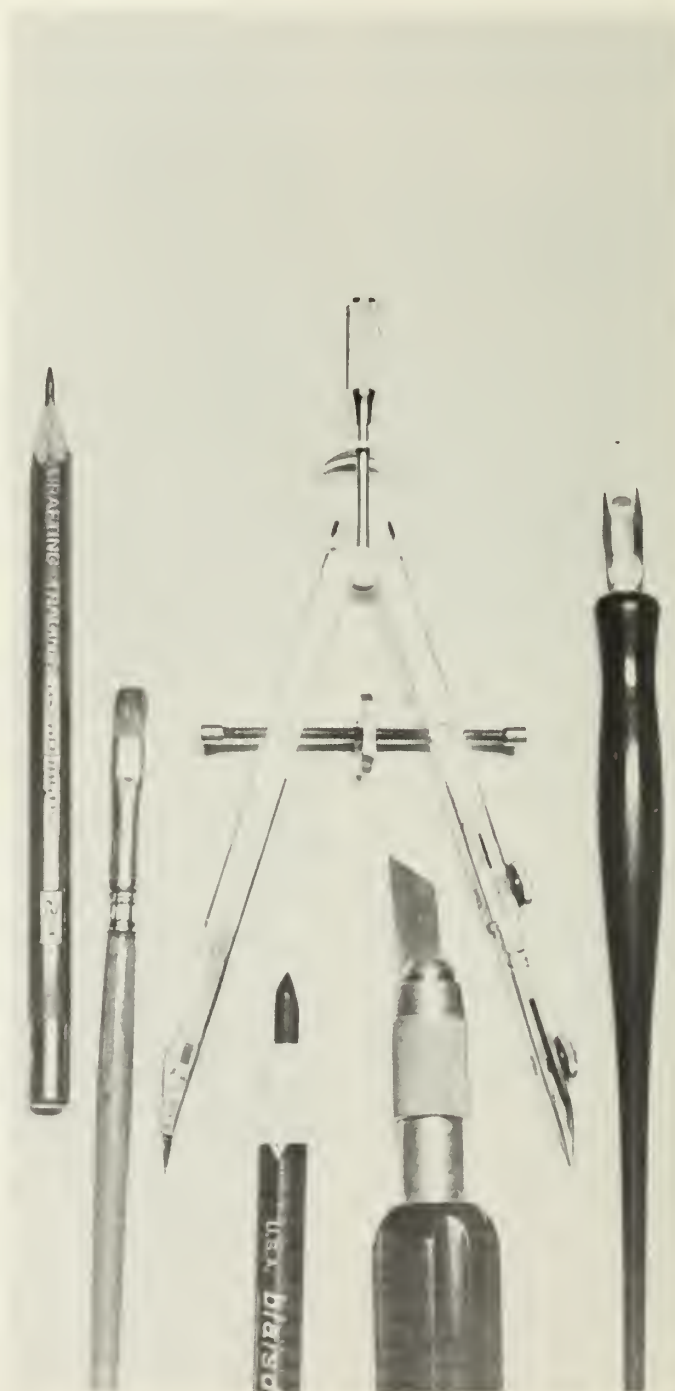
**Edward Togneri** • painter

**Dante Vena** • art educator,  
printer

**Howard Windham** • painter

The Foundation Studio Courses (AR 100 courses) are required of all Art Majors and are a prerequisite for all AR 200, or higher courses in Fine Arts, Visual Design, Textile Design and Art Education. These studio courses deal, on a primary level, with all of the necessary prerequisites for the in-depth study in any of the Sophomore option areas offered by the College. Great emphasis on drawing skills through organic and non-organic subject matter, as well as a probe of conceptual approaches are designed to develop a perceptive sensitivity to composition and the order of design elements. A special section of Foundation is reserved for all students who know that they want to major in the Fine Arts, that is, in painting, sculpture, or printmaking.

A-H 101, Ancient and Medieval Art, and A-H 102, Renaissance to Modern Art, are required art history courses and together with A-H 345 Development of Modern Painting, scheduled for the second year, provide an historical survey of the art of the western world.



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**First Year Curriculum for all  
Majors (Except Art History)**

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First Year			Semester Credits	First	Second
AR	110	112	Foundation Drawing	3	3
AR	114	115	2D Workshop I & II	2	2
AR	124	125	3D Workshop I & II	2	2
A-H	101		Ancient and Medieval Art	3	3
or			or		
A-H	102		Renaissance to Modern Art	3	3
E	101	102	Freshman English	3	3
			Social Science Elective	3	3
				16	16

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**Foundation Courses**

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**AR 110 • 3 credits**

**Foundation Drawing**

A studio exploration of varied subject matter, with special emphasis on the human form, and of representation on the 2-D surface with various drawing media. 6 hours per week.

**AR 112 • 3 credits**

**Foundation Drawing**

Continuation of AR 110.

Prerequisite: AR 110

**AR 114 • 2 credits**

**2D Workshop I**

An introduction to 2-D principles of composition through projects exploring line, shape, texture, tone, and color. Students work with basic wet and dry line color media. 4 hours per week

**AR 115 • 2 credits**

**2D Workshop II**

Continuation of AR 114.

Prerequisite: AR 114.

**AR 124 • 2 credits**

**3D Workshop I**

An introduction to 3-D concepts through projects exploring form, space, structure, texture, color, and environment. Students work with basic sculpture processes of carving, modeling, casting, and assemblage

**AR 125 • 2 credits**

**3D Workshop II**

Continuation of AR 124

Prerequisite: AR 124

**A-H 101 • 3 credits**

**Ancient and Medieval Art**

This course constitutes a survey of Prehistoric, Egyptian, Mesopotamian, Greek, Roman, Byzantine, Carolingian, Romanesque and Gothic Art, and is designed to familiarize the student with the visual and literary vocabulary of art.

**A-H 102 • 3 credits**

**Renaissance to Modern Art**

This course, a continuation of A-H 101, which, however, need not be taken in sequence, surveys the painting, sculpture and architecture of the Renaissance in Italy and Northern Europe, sixteenth century Mannerism, the Baroque and Rococo periods and the nineteenth century to Impressionism.

Note: A-H 101 is a prerequisite for all subsequent courses covering periods before the Renaissance, and A-H 102 is the prerequisite for all subsequent courses concerned with periods since the Renaissance.

# Art Education

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## Faculty and Fields of Interest

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**Elleda Katan** • art education,  
foundations program

**Peter London** (chairperson) •  
art education, painting

**Dante Vena** • art education,  
printmaking



The Art Education program provides a sequence of practical, theoretical and studio-based experiences leading to proficiency in the teaching of art. The scope of the program permits the student to work in public school systems and/or in other private and public agencies and levels. The core of the program is a balance between supervised field work in surrounding communities and university courses

in the theory and practice of art and education.

A positive recommendation of the Sophomore Review Committee permits the student to major in the program and register for the third and fourth year courses. Successful completion of the program leads to state certification as well as a Bachelor of Fine Arts degree

## Requirements

Second Year			Semester Credits	First	Second
AE	200	Development of Visual Symbols		3	
		Art History Elective		3	
ED	205	Human Development and Learning			3
or					
PY	340	Educational Psychology			3
or					
ED	310	Understanding the School Child			3
ED	210	Philosophy of Education			3
AE	210	Arts in Society			3
		Studies in Literature	3	3	
AR	221	Figure Drawing I	2	2	
	222	**CFAA Electives	5	3	
				16	17
Third Year			Semester Credits	First	Second
AE	300	Curriculum Methods and Materials in Art Education I		3	
AE	310	Curriculum Methods, Concepts and Principles in Art Education II			3
		Science Elective	3	3	
		*CFAA Electives	9	10	
				15	16
Fourth Year			Semester Credits	First	Second
AE	400	Curriculum Methods in Art Education: Humanistic		3	
AE	410	Art Education Seminar II			3
AE	411	Student Teaching			9
		Humanities/Social Science Electives	3	3	
		*CFAA Electives	9		
				15	15

\*Studio concentration may be Painting, Visual Design, or Textiles

With consultation of the Art Education Chairman, a concentration in a studio area can be designed in other areas, e.g. Crafts, Art History, Sculpture, 2-D work, etc.

\*\*Painting majors: take Sophomore Painting and Drawing. Visual Design majors: take Color, Methods and Materials and Structural Representation in the Sophomore year.

Four Art History courses are required for graduation.



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## Art Education Courses

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### **AE 200 • 3 credits** **Development of Visual Symbols**

Provides an understanding of the sequential development of symbolization from infancy to adulthood in formal and informal learning settings. The course will enable students to develop a skilled and critical use of techniques for observing and recording children's creative behavior. Through field work and related readings, students will observe and analyze the creative expression of children and adults. Formerly AE 210.

### **AE 210 • 3 credits** **Arts in Society**

The objective of this course is to describe the wide variety of purposes that artists and the arts serve society. It will investigate the present American society-artist relationship and contrast it with selected societies, present and past. The artist as recorder, celebrator, propagandist, designer, prophet, craftsman, performer will be studied to appreciate the many contributions of the artist to the community. The course will employ lectures, interviews with artists, papers, and slide presentations to convey its content.

### **AE 300 • 3 credits** **Curriculum Methods in Art Education: Methods and Materials**

The most frequently practiced art curriculum is one based upon media exploration. Each medium has special properties and appeals and should be appreciated by the art teacher as both a mode of expression and means of instruction. The objective of this course is to develop skills in designing curricula for varied age groups which concentrate on the expressive range of each media. The field work component

consists of media demonstrations both in class and in in-service workshops. This course was formerly AE 312.

### **AE 310 • 3 credits** **Curriculum Methods in Art Education: Principles and Concepts**

This curriculum design course will have as bases: elements of art, e.g. line, color, form, texture; concepts, e.g. pattern, symmetry, rhythm; and styles of art, e.g. classicism, romanticism, expressionism. The student will develop lessons and units which are based on the above qualities and put them into practice through field work and classroom presentations. Field work will be primarily with in-service teachers. Formerly AE 313.

### **AE 400 • 3 credits** **Curriculum Methods in Art Education: Humanistic Approaches**

The humanistic approach to curriculum design places the needs and attributes of the learner first and foremost in considering the question "What shall I teach?" The client's physical, emotional, intellectual, and social standing is assessed and then the curriculum designed to respond to noticed areas of need and want. The client is appreciated moralistically and close interpersonal relations fostered. Field work will be done in non-public school settings such as hospitals, day care centers, and other social welfare agencies. Formerly AE 414.

**AE 410 • 3 credits**  
**Art Education Seminar**  
Intended to coordinate with AE 411, this seminar provides the opportunity for the student teachers to come together once a week and share their insights

and problems. Continued readings in contemporary ideas in art education and demonstrations of newer techniques and media. Formerly AH 415.

### **AE 411 • 9 credits** **Student Teaching**

Experience in the observation and teaching of art in circumstances similar to the classroom teacher. The student is assigned to a school corresponding as much as possible with the student's own interests. Working with and supported by a cooperating teacher and supervisor from the University, the student is afforded the opportunity to conduct art experiences under actual classroom conditions and responsibilities. Formerly AE 416.

Prerequisite: Departmental recommendation.

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## Faculty and Fields of Interest

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**Herbert P. Cummings** • painter

**James Toatley** • sculptor

**Willoughby Elliott** • printmaker

**Edward P. Togneri** • painter

**Thomas F. McCoy** (chairperson)  
• painter

**Steven Plumhoff** • sculptor

**Anthony Miraglia** • painter

**Roseann Radosevich** •  
printmaker



In the Fine Arts program, we do not teach artists; rather we are involved in the process of teaching students to become artists. This includes teaching the elements and the principles of the craft so that the student will be firmly grounded in the basic concepts. Once the student is versed in these basic concepts, he has the ability to move in many more directions with confidence and authority.

The above is not to imply that craftsmanship is synonymous with art. Craft and basic concepts are employed to produce work that transcends mere craft. The student is not expected to blindly follow customs of the past or trends of the present. However, the student must realize that structure is one of the aims of his education in art.

The basic fundamentals should

be considered in the making of a work of art and should be a part of the making of an artist. These fundamentals should not only consist of learning the elements of visual order but also the promotion of the ability to be wondering and inquisitive.

## Painting Major

The painting program emphasizes both a solid grounding in traditional painting materials and methods and an understanding of contrasting points of view. Varied modes of painting are dealt with

in the advanced courses as students wish to pursue them for valid avenues of experimentation.

Other majors are Sculpture and Printmaking.

The ultimate objective is to develop the student's respect for the learning process and the creative act as a means of preparing him for an active role in the cultural stream of life.

## Fine Arts Major Program

Second Year			Semester Credits: First		Second
		Major Studio		4	4
AR	221	222	Figure Drawing I	2	2
		Studio Elective		3	3
A-H	345		Development of Modern Painting or	3	
A-H	346		Development of Modern Sculpture	3	
		Humanities/Social Science			3
		Studies in Literature		3	3
				15	15
Third Year			Semester Credits: First		Second
		Major Studio		6	6
AR	311	312	Composition	3	3
AR	321	322	Figure Drawing II	2	2
		Studio Elective		3	3
		Science Elective		3	3
				17	17
Fourth Year			Semester Credits: First		Second
		Major Studio		6	6
AR	421	422	Drawing III	2	2
		Studio Elective		3	3
		Humanities/Social Science		3	3
		Art History Elective (either semester)		3	3
Total: 127 credits				14	17

Note: Sculpture required one semester for Painting Majors. Painting required one semester for Sculpture majors.

Printmaking majors are required to take two semesters of painting, two semesters of figure drawing, one semester of sculpture and at least one semester of printmaking chosen from the 200 series (AR 283, 284, 285) during the sophomore year.

These three AR 200 courses are necessary to complete Printmaking I.

A printmaking major must complete Printmaking I before taking Printmaking II, AR 383.

If a printmaking major takes only one 200 Printmaking course in the sophomore year, he/she must take the two remaining courses in the 200 series con-

currently in the first semester of the junior year.

A minimum of one Art History elective (3 credits) must be taken following the required A-H 101, A-H 102, A-H 345 or A-H 346 sequence. All Painting and Printmaking majors are required to take A-H 345, Development of Modern Painting. All Sculpture majors are required to take A-H 346, Development of Modern Sculpture.

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## Fine Arts Courses

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### **AR 221 • 2 credits**

#### **Figure Drawing I**

The Human figure, its form, mass, and proportions, is studied in relation to its environment. Live models are used. Six studio hours.

### **AR 222 • 2 credits**

#### **Figure Drawing I**

A continuation of AR 221.

### **AR 243 • 4 credits**

#### **Painting I**

This is an introductory course in beginning painting. The technique of oil painting is predominant, however, other plastic mediums are also considered. Concepts of design, composition, and color are studied. The development of the intuitive and creative ability of the individual is given careful attention. Six studio hours.

Prerequisite: AR 112

### **AR 244 • 4 credits**

#### **Painting I**

A continuation of AR 243.

### **AR 283 • 3 credits**

#### **Printmaking I**

A studio course in the techniques of relief and intaglio. Artistic values as well as techniques will be stressed.

Prerequisite: Painting I and Figure Drawing I must be taken in conjunction with Printmaking I.

### **AR 284 • 3 credits**

#### **Printmaking I**

A studio course in silkscreen, in which various stencil-making processes will be introduced. Color and shape relationships, as well as artistic values and techniques will be stressed. Prerequisite: Painting I and Figure Drawing I must be taken in conjunction with Printmaking I.



### **AR 285 • 3 credits**

#### **Printmaking I**

An introduction to the printing process of lithography on stone, and aluminum plate. The development of artistic values as well as technical facilities will be stressed.

Prerequisite: Painting I and Figure Drawing I must be taken in conjunction with Printmaking I.

### **AR 291 • 3 or 4 credits**

#### **Sculpture**

A structured introduction to basic techniques including clay modeling from the figure, uses of plaster, wood, welding, bronze and aluminum casting. The course is meant to enable the beginning student to explore media and gain fundamental skills with them. Occasional slide talks. Content, form and technique are discussed in relation to the work. Students who plan to major in sculpture can register for four (4) credits. The work

required will be adjusted accordingly.

Prerequisite: Sophomore art major standing or permission of department.

### **AR 292 • 3 or 4 credits**

#### **Sculpture**

A continuation of AR 291. Students who plan to major in sculpture can register for four (4) credits. The work required will be adjusted accordingly.

### **AR 311 • 3 credits**

#### **Composition**

An advanced consideration of design principles is applied to weekly assigned drawing problems. Resourcefulness in technical treatment and imaginative approach are encouraged. Six studio hours.

Prerequisite: AR 244 and AR 222



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**AR 312 • 3 credits****Composition**

A continuation of AR 311

**AR 321 • 2 credits****Figure Drawing II**

This course is an continuation of Figure Drawing I. New techniques and media are introduced. Six studio hours.

Prerequisite: AR 222

**AR 322 • 2 credits****Figure Drawing II**

A continuation of AR 321.

**AR 341 • 6 credits****Painting II**

This is an intermediate course, with painting problems related to the individual and to improve the student's ability to compose in a professional manner. The student works from the figure, nature, and still life with an emphasis toward his personal development.

Twelve studio hours

Prerequisite: AR 244 and AR 222

**AR 342 • 6 credits****Painting II**

A continuation of AR 341

**AR 383 • 3 or 6 credits****Printmaking II**

A studio course aimed at developing a high degree of technical articulation with printmaking techniques of the students' choice as they relate to the image making process.

Prerequisite: AR 283, 284, 285, and AR 222

**AR 391 • 3 or 6 credits****Sculpture II**

A course designed for those having a deeper interest in sculpture. Intended to deepen and refine skills in one or more media. The beginning of the student's development of a sculptural idea in an open workshop. Students who are majoring in sculpture can register for six (6) credits. The work required will be adjusted accordingly.

Prerequisite: AR 292

**AR 392 • 3 or 6 credits****Sculpture II**

A continuation of AR 391.

**AR 421 • 2 credits****Drawing III**

A drawing course intended to help the student correlate previous drawing experiences. More emphasis is placed on individual expression and interpretation. Six studio hours.

Prerequisite: AR 322

**AR 422 • 2 credits****Drawing III**

A continuation of AR 421

**AR 441 • 6 credits****Painting III**

This course covers advanced problems in painting with emphasis on personal development. There are individual criticisms and seminar discussions of contemporary problems in painting. Twelve studio hours.

**AR 442 • 6 credits****Painting III**

A continuation of AR 441 with the student gradually working more independently. Criticisms become even more on an individual basis.

**AR 483 • 3 or 6 credits****Printmaking III**

An advanced studio course in printmaking aimed at the further

development of a professional attitude toward the printmaking techniques as a means of artistic statement.

Prerequisite: A minimum of 15 credits in printmaking.

**AR 484 • 3 or 6 credits****Printmaking III**

A continuation of AR 483.

Prerequisite: AR 483

**AR 491 • 3 or 6 credits****Sculpture III**

A studio course stressing individual concentration with sculptural media and processes for the advanced student. Students who are majoring in sculpture can register for six (6) credits. The work required will be adjusted accordingly.

**AR 492 • 3 or 6 credits****Sculpture III**

A continuation of AR 491. Students who are majoring in sculpture can register for six (6) credits. The work required will be adjusted accordingly.

**Independent Study**

Upper division students whose academic records are meritorious may request to do independent study for up to six (6) semester hours of credit (maximum allowed for entire academic career) in studio, art history or art education areas upon recommendation of the department chairman together with a faculty sponsor and the approval of the Dean of the College. The student must submit a written proposal and outline of the program of study to be undertaken, which, if approved by the sponsor and department chairman, will become a guide for evaluating the student's performance and accomplishment. The student will be held responsible for meeting the requirements of the independent study as outlined and

approved, and the sponsor will assume responsibility for coordinating the independent study, evaluating its results and determining an appropriate grade for the same.

Independent study will only be approved for research into areas of study that do not duplicate the University's current curriculum of courses.

## Design Department

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### Faculty and Fields of Interest

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**Robert Barry** • illustration

**Elaine Fisher** • photography

**Howard Glasser** • calligraphy

**Georgette Macafee** • design

**Theodore Mead** • photography

**George Mellor** • ceramics

**Carolyn Johnson/Mills** • textile design

**Margot Neugebauer** (character person) • jewelry

**Harold Pattek** • design

**Marjorie Durko Puryear** • textile design

**Howard Windham** • design

The Design Department offers two major undergraduate programs and a Master of Fine Arts degree program in Visual Design. The two undergraduate programs are Visual Design and Textile Design.



## Textile Design Major

Education of the textile designer is concerned with the preparation of the student to design woven and printed fabrics plus other industrial applications in the areas of wallpapers, tiles, linoleums, decorative papers and plastic. The student in the

Textile Design major program is confronted with creative, technical and production problems related to the field. In the senior year a student can concentrate in either woven or printed fabric design.

## Textile Design Major Program

Second Year				Semester Credits:	First	Second
TD	271	272	Textile Design I		3	3
			Studio Elective		3	3
AR	211		Color, Materials and Methods		2	
VD		224	Structural Representation			2
AR	273	274	Handloom Weaving		3	3
TT	331	332	Textile Technology		3	3
			Studies in Literature		3	3
					17	17
Third Year				Semester Credits:	First	Second
TD	371	372	Textile Design II		4	4
AR	373	374	Handloom Weaving		3	3
TT	225	226	Design and Structure I, II		3	3
			Science Elective		3	3
			Humanities/Social Science Elective		3	
			Modern Art History Elective			3
					16	16
Fourth Year				Semester Credits:	First	Second
TD	471	472	Textile Design III (Concentration)		6	6
			*Studio Elective		3	3
			Art History Elective		3	
			Free Elective			3
			Humanities/Social Science Elective		3	3
					15	15

\* Design and Structure III and IV may be Studio electives for Weaving Concentration  
Total required for graduation — 126 credits



## Textile Design Courses

### **TD 271 • 3 credits**

#### **Textile Design I**

The second year textile design major is introduced to printed textile design. The student is given practice in rendering techniques and printing methods. The course also covers nature study as applied to textile design. Six studio hours.

Prerequisite: Foundation Courses.

### **TD 272 • 3 credits**

#### **Textile Design I**

A continuation of AR 271. Six studio hours.

Prerequisite: Foundation Courses.

### **AR 273 • 3 credits**

#### **Handloom Weaving I**

This course gives the student the opportunity to learn the basic principles of weaving on a handloom or experiment in the off-loom techniques. He is encouraged to experiment with colors, textures and basic weaves. More advanced weaves are explored as the student gains in skills and techniques. Six studio hours.

### **AR 274 • 3 credits**

#### **Handloom Weaving II**

A continuation of AR 273. Six studio hours.

### **TD 370 • 3 credits**

#### **History of Textiles**

This is a survey of the evolution of textiles from the earliest times to the present. The intention is to give the textile design student an understanding of textile development in all its forms: the interplay of weaving and printing techniques, the effect of the great design periods, the continuance in the synthetic materials and the technology of the present. There will be museum visits to further investigation and study. History of Textiles can be taken as an Art History elective or as an humanities elective.

### **TD 371 • 4 credits**

#### **Textile Design II**

Advanced problems in designing patterns on paper for fashion and decorative fabrics is covered. Nature drawing is included, exploring color schemes and surface patterns. Eight studio hours.

Prerequisite: TD 272

### **TD 372 • 4 credits**

#### **Textile Design II**

Advanced problems in designing using the silk screen mediums as solution methods. The course includes nature drawing. Eight studio hours.

Prerequisite: TD 272

### **AR 373 • 3 credits**

#### **Handloom Weaving III**

This is an advanced course giving the student opportunity to develop original designs on the loom and off the loom. Further study is involved in advanced weaves, rug and tapestry techniques, soft sculptures and fiber wovens. Six studio hours.

Prerequisite: AR 273 and AR 274

### **AR 374 • 3 credits**

#### **Handloom Weaving IV**

A continuation of AR 373. Emphasis is placed on experimentation. Six studio hours.

Prerequisite: AR 373

### **TD 471 • 6 credits**

#### **Textile Design III**

A study is made of the more complex problems in designing fabrics for either wovens or prints with emphasis on originality in the chosen area. Twelve studio hours.

Prerequisite: TD 371 and 372 or AR 373 and 374

### **TD 472 • 6 credits**

#### **Textile Design III**

A continuation of TD 471. Twelve studio hours.

Prerequisite: TD 471



## Visual Design Major

This program of education is based entirely on the understanding of the designer as an artist. While it is directed in many ways toward a professional competence, it refuses to fetter the designer with a rigid set of principles or practices. In general, the assigned projects deal with communications in the widest sense; and the student is expect-

ed to be able to solve these projects creatively by using the widest variety of technical and graphic means. A student may choose to concentrate in visual design, illustration, photography or typography within the Design major.

## Visual Design Major Program

Second Year			Semester Credits: First      Second	
AR	211	Color, Materials and Methods	2	
VD	224	Structural Representation		2
AR	221	Figure Drawing I	2	2
		Humanities/Social Science Elective	3	
		Modern Art History Elective		3
VD	251	Visual Design I	3	3
		Studio Elective	3	3
		Studies in Literature	3	3
			16	16
Third Year			Semester Credits: First      Second	
VD	351	Visual Design II	4	4
		Studio Elective (concentration)	3	3
AR	281	Photograph I	3	3
VD	385	Typography	3	3
		Science Elective	3	3
			16	16
Fourth Year			Semester Credits: First      Second	
		Major Concentration	6	6
VD	451	Visual Design III	3	3
		Art History Elective	3	
		Free Elective		3
		Humanities/Social Science Elective	3	3
Total	126 credits		15	15

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## Design Courses

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### \*AR 295, 296, 395, 396:

A four semester sequence which can be started at any semester—fall or spring—with each semester being prerequisite for the next. No prerequisite for Jewelry and Metalwork I.

### AR 211 • 2 credits

#### Color, Materials and Methods

This is a second year course for students in visual design, textile design, and art education. The use of color in many different ways and with a great variety of materials and surfaces is the basis of the program. Methods which will be taught concurrently, is concerned with achieving the drawn image by means of varying techniques and media. Four studio hours.

### VD 221 • 3 credits

#### Calligraphy I

The fundamentals of the alphabet as a language system and its graphic implications. Projects emphasize the visual relationships of formal and informal letterforms as affected by natural rhythms, line shape, texture and the integration of images and decoration.

### VD 222 • 3 credits

#### Calligraphy II

A continuation of VD 221, Calligraphy I: an in-depth study of the five basic alphabetic styles through design problems.

### VD 224 • 2 credits

#### Structural Representation

This course is meant to provide the student with experience in handling volume and spatial arrangements. It deals with projection drawing of all kinds and touches upon three-dimensional model making. Six studio hours.

### VD 251 • 3 credits

#### Visual Design I

The student, in taking this course, has elected to explore the world of the designer. He/she is introduced to all phases of communications design, touching on traditional as well as contemporary methods. Six studio hours.

### VD 252 • 3 credits

#### Visual Design I

A continuation of VD 251.

### AR 281 • 3 credits

#### Photography I

A basic survey is made of the theory of black and white photography. Darkroom experience includes the development of film, contact and enlargement printing. One lecture hour, three laboratory hours.

### AR 282 • 3 credits

#### Photography II

A continuation of AR 281, with emphasis on development of printing skills, professional presentation, and exploration of contemporary means of photographic expression. One lecture hour, three laboratory hours. Prerequisite: AR 281

### AR 293 • 3 credits

#### Ceramics I

An introduction to ceramic stone-ware techniques and processes, including assigned reading, hand building, wheel throwing, glazing and firing. Prerequisite: Sophomore art major standing or permission of department.

### AR 294 • 3 credits

#### Ceramics I

A continuation of AR 293.

### \*AR 295 • 3 credits

#### Jewelry and Metalwork I

This course is designed to give the student a working knowledge of the tools and techniques involved in the making and designing of jewelry. Basic skills in cutting, soldering and working with precious metals eventually lead to incorporating stones and gems in original pieces.

### \*AR 296 • 3 credits

#### Jewelry and Metalwork II

A continuation of AR 295 with greater emphasis on the design and execution of original work. Technical skills are developed further as the student works in increasingly complex techniques.

### AR 323 • 3 credits

#### Illustration

In this course, students are encouraged to develop an enterprising approach to drawing and design relative to the concerns of the illustrator. A brief

survey of the History of Illustration is included to acquaint students with outstanding illustrators of the past. Techniques which will be useful in this field are explored, and a variety of projects assigned with the aim of eliciting a sensitive graphic response from the students. Prerequisite: AR 221, 222.

### AR 324 • 3 credits

#### Illustration

A continuation of AR 323.

### VD 351 • 4 credits

#### Visual Design II

The student should now be able to analyze a design project to some extent and produce a satisfactory communications design. Various aspects and formats will be examined. Considerable emphasis will be placed on finish and on the correct handling of the creative intent on. Nine studio hours. Prerequisite: AR 251, 252

### VD 352 • 4 credits

#### Visual Design II

A continuation of VD 351

**AR 381 • 3 credits**  
**Photography III**

The development of a personal approach to photography as well as application of techniques used in applied photography are integrated in a series of projects involving multiple image printing, use of high contrast film, and large format camera work. One lecture hour, three laboratory hours.  
Prerequisite: AR 282

**AR 382 • 3 credits**  
**Photography IV**

A continuation of AR 381 with further exploration of experimental techniques and their application to applied and personal photographic statements. The zone system is studied in depth. A brief survey is made of the history of photography. Two lecture hours, three laboratory hours.  
Prerequisite: AR 381

**VD 385 • 3 credits**  
**Topography**

This course is meant to give the design student a wide understanding of typography in relation to communications. Exercises in basic typography are combined with field trips to plants and businesses involved in the graphic arts. As the course progresses there is increasing emphasis on the creative aspects of typography. Six laboratory hours.

**VD 386 • 3 credits**  
A continuation of VD 385.

**AR 393 • 3 credits**  
**Ceramics II**

A more advanced workshop course including refinement of technical and formal approach, glaze formulation, experimentation with clay bodies, firing techniques, sculptural processes, etc.  
Prerequisite: AR 294 or instructor's permission.

**AR 394 • 3 credits**  
**Ceramics III**  
A continuation of AR 393.

**\*AR 395 • 3 credits**  
**Jewelry and Metalwork III**  
Casting and enameling are introduced as further exploration is carried out in the methods involved in the designing and fabrication of objects in metal. The student is encouraged to investigate original ideas of expression while working with the various materials available to the metal craftsman.

**\*AR 396 • 3 credits**  
**Jewelry and Metalwork IV**  
A continuation of AR 395.

**AR 423 • 3 or 6 credits**  
**Advanced Illustration**  
The objective of this course is to seek out the particular illustration strengths of the student. There is an emphasis on individual direction and requirements. Where possible, students are encouraged to work in areas which will lead to having examples of their illustrations reproduced while enrolled in the course. Students who are concentrating in Illustration can register for six (6) credits. The work required will be adjusted accordingly.

**AR 424 • 3 or 6 credits**  
**Advanced Illustration**  
A continuation of AR 423. Students who are concentrating in Illustration can register for six (6) credits. The work required will be adjusted accordingly.

**VD 451 • 3 credits**  
**Visual Design III**  
This course prepares the student for professional work in the Visual Design field. Assignments in a variety of directions: book design, packaging, public relations, environmental elements, communications problems and systems design. Six studio hours.

**VD 452 • 3 credits**  
**Visual Design III**  
A continuation of VD 451.

**AR 481 • 3 or 6 credits**  
**Photography V**  
An intensive study is made of advanced techniques used in contemporary photography. Emphasis is placed on the de-

velopment of a personal photographic approach coupled with professional esthetic standards. Three lecture hours, six laboratory hours. Students who are concentrating in Photography can register for six (6) credits. The work required will be adjusted accordingly.  
Prerequisite: AR 382

**AR 482 • 3 or 6 credits**  
**Photography VI**  
A continuation of AR 481 with an emphasis placed on the preparation of a professional photographic portfolio. Three lecture hours, six laboratory hours. Students who are concentrating in Photography can register for six (6) credits. The work required will be adjusted accordingly.  
Prerequisite: AR 481

**VD 485 • 3 or 6 credits**  
**Advanced Typography**  
The student explores projects in typography on an advanced professional level. He/she will be prepared to function in publishing, advertising and typographic design. Six studio hours. Students who are concentrating in Typography can register for six (6) credits. The work required will be adjusted accordingly.

**VD 486 • 3 or 6 credits**  
**Advanced Typography**  
A continuation of VD 485. Students who are concentrating in Typography can register for six (6) credits. The work required will be adjusted accordingly.

**AR 493 • 3 credits**  
**Ceramics III**  
An advanced course in ceramics stressing individual concentration with processes of construction, throwing, glazing and firing.

**AR 494 • 3 credits**  
**Ceramics III**  
A continuation of AR 493.



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### Faculty and Fields of Interest

**Pearlee Freiberg** • renaissance, baroque and eighteenth century art

**Thomas Puryear** (chairperson)  
• ancient and medieval art

Art History is the study of the visual arts, architecture, sculpture, painting, and the many crafts which often blend im-

perceptibly into the domain of the fine arts. Art History offers an understanding and appreciation of mankind's diverse visual experience. Such study invariably leads to an examination of the conditions which attend creation, the confluence of political, sociological, and intellectual events which helped to shape not only art, but the whole of civilization.

The major program is intended for students who may wish to prepare for advanced work in one of the specialized areas of Art History, but Art History is also advantageous for art students, and liberal arts students, particularly those who are interested in inter-disciplinary relationships.



### Art History Major Program

First Year		Semester Credits: First      Second	
A-H 101	Ancient and Medieval Art	3	3
or			
A-H 102	Renaissance to Modern Art	3	3
E 101 102	Freshman English	3	3
	Social Science Elective	3	3
	History or Philosophy Elective	3	3
	Science Elective	3	3
		15	15

Second Year		Semester Credits: First      Second	
	Art History Elective	3	3
	Literature Elective	3	3
	Free Elective	3	3
	History or Philosophy Elective	3	
	Art History Elective		3
	Social Science Elective	3	3
		15	15

Note: A program of cognate course work will be filed with the student's advisor for approval in the second semester of the sophomore year. In the case of transfer students, this will be done at the time of admittance to the University.

Some areas normally considered as related course work to Art History are:

Studio Art  
Art Education  
Music  
Drama  
Foreign Languages  
Literature  
History  
Philosophy  
Sociology-Anthropology

Other subjects may be accepted as related course work in consultation with the student's advisor.

Foreign Language courses are encouraged, particularly for those students who intend to pursue graduate studies.

Third Year		Semester Credits: First      Second	
	Art History Elective	3	3
	Cognate course Elective	3	3
	Free Elective	3	3
	Art History Elective	3	3
	Cognate course Elective	3	3
	Free Elective		3
		15	18

Fourth Year		Semester Credits: First      Second	
	Art History Elective	3	3
	Cognate course Elective	3	3
	Free Elective	3	3
	Cognate course Elective	3	
	Art History Elective		3
	Free Elective	3	3
Total 123 credits		15	15

Note: One Art History Seminar is required

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## Art History Courses

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### **A-H 101 • 3 credits**

#### **Ancient and Medieval Art**

This course constitutes a survey of Prehistoric, Egyptian, Mesopotamian, Greek, Roman, Byzantine, Carolingian, Romanesque and Gothic Art, and is designed to familiarize the student with the visual and literary vocabulary of Art. Formerly AH 133.

### **A-H 102 • 3 credits**

#### **Renaissance to Modern Art**

This course, a continuation of A-H 101, which, however, need not be taken in sequence, surveys the painting, sculpture and architecture of the Renaissance in Italy and Northern Europe, 16th century Mannerism, the Baroque and Rococo periods, and the 19th century to Impressionism. Formerly AH 134.

Note: A-H 101 is a prerequisite for all courses before the period of the Renaissance and A-H 102 is a prerequisite for all courses after the Renaissance.

### **A-H 303 • 3 credits**

#### **Greek Art**

This course will trace the development of styles of Greek architecture, sculpture, and painting. Emphasis will be placed on the definition of Classicism and the variety of its expression in the fifth and fourth centuries B.C. Formerly AH 332.

### **A-H 306 • 3 credits**

#### **Roman Art**

This course will attempt to define the Roman qualities of Roman Art, in contrast to its Etruscan, Greek and Hellenistic forebearers. The development of painting, sculpture and architecture will be traced to the time of Emperor Constantine, ca. 325 A.D. Formerly AH 342

### **A-H 311 • 3 credits**

#### **Early Christian and Byzantine Art**

The changes in style in architecture, painting and sculpture which separate the art of the Late Roman Empire from the Medieval period will occupy the attention of the first third of this course. The last two-thirds will concern Merovingian, Irish and Carolingian Europe and the parallel development of Byzantine styles up to the year 1000. Formerly AH 342.

### **A-H 315 • 3 credits**

#### **Romanesque Art**

This course will deal with architecture, painting and sculpture in western Europe from about the year 1000 through the 12th century. It will be concerned with the beginnings of Romanesque art in Germany, Southern France, Italy and Spain and will concentrate on the subsequent development of these variations up to the beginning of the Gothic Era. Formerly AH 334

### **A-H 316 • 3 credits**

#### **Gothic Art**

A course concerning the architecture, sculpture, manuscript painting and stained glass from the beginnings of the Gothic in England, Normandy, and the Isle de France to the internationalization of the style in the 13th and 14th centuries. Formerly AH 344.

### **A-H 321 • 3 credits**

#### **Early Northern Painting**

The development of panel painting in France and the low countries from 1400 to the early years of the 16th century will constitute the major interest of the course, but close attention will also be paid to miniature painting, engraving and the beginnings of printing in this period. Formerly AH 345.

### **A-H 325 • 3 credits**

#### **Italian Renaissance Art**

A study of the painting, sculpture and architecture in Italy from ca. 1400 to 1520. Formerly AH 335.

### **A-H 328 • 3 credits**

#### **Venetian Painting**

A survey of painting in Venice from the 15th century through the 18th centuries. Emphasis will be placed on the 16th century. Formerly AH 347.

### **A-H 336 • 3 credits**

#### **Baroque Art in Italy and France**

A study of painting, sculpture and architecture in Italy and France during the 17th century

### **A-H 337 • 3 credits**

#### **Baroque Art in Flanders, Holland and Spain**

A survey of 17th century painting in these countries with an in-depth study of Rubens and Rembrandt.

### **A-H 339 • 3 credits**

#### **18th Century European Painting**

A study of 18th century European painting, principally French and British. Formerly AH 433

### **A-H 341 • 3 credits**

#### **19th Century European Painting**

The movements and counter-movements which produced Neoclassicism, Romanticism, Realism and Impressionism are traced from the late 18th century to the 1870's in England, France, Spain and Germany. Formerly AH 338.

### **A-H 345 • 3 credits**

#### **Development of Modern Painting**

A study is made of 20th century painting, beginning with the

contributions of the Post-Impressionist generation in the late 19th century. Formerly AH 233. Modern Art

**A-H 346 • 3 credits**  
**Development of Modern Sculpture**

After a brief introduction to the academic sculpture of the 19th century, this course examines modernist innovations in sculpture from Rodin to David Smith. Formerly AH 326

**A-H 351 • 3 credits**  
**American Folk Art**

Beginning with colonization, the American frontier tradition of "do it yourself", as it pertained to the visual arts, both decorative and utilitarian, will be examined. Concentration will be on the painting, sculpture and crafts of the late 18th and 19th centuries. The relationships between folk, popular and provincial art will be an area of critical concern.

**A-H 355 • 3 credits**  
**American Painting**

A survey of major artists and tendencies from the earliest colonial limners to the triumph of Abstract Expressionism in the mid-20th century. Formerly AH 339

**A-H 360 • 3 credits**  
**Method and Theory in Primitive Art**

An introduction to the arts of Africa, Oceania and the Americas. The course will emphasize method, theory and cross-cultural analysis. Formerly AH 240

**A-H 361 • 3 credits**  
**Arts and Cultures of West Africa**

Survey of the arts, crafts and architecture of the Western Sudan and Guinea Coast. Historical

developments, stylistics and aesthetics will be investigated within a socio-cultural framework. Formerly AH 241.

**A-H 362 • 3 credits**  
**Arts and Cultures of Central Africa**

Survey of the arts, crafts and architecture of Nigeria plus central and southern Africa. Formerly AH 242.

**A-H 363 • 3 credits**  
**Pre-Hispanic Art**

Examination of the arts and architecture of Mexico, Central America, the Indies and South America before the arrival of the Spanish. Formerly AH 244

**A-H 365 • 3 credits**  
**North American Indian Art I**

Survey of the arts, crafts and architecture of the Native American populations in the Southwest, California and the Plains. Formerly AH 246.

**A-H 366 • 3 credits**  
**North American Indian Art II**

This course will investigate the arts and crafts of the Northwest Coast, the Arctic area, the Eastern woodlands, and the Southeast.

**A-H 367 • 3 credits**  
**Oceanic Art**

Detailed survey of the arts and crafts of the Pacific Islands and Australia. Historical and cultural determinants will be examined. Formerly AH 249.

**A-H 369 • 3 credits**  
**Contemporary African Art**

A survey of the Contemporary African art work in which carving, craft products, ethnographic materials and contemporary paintings are discussed in terms of stylistic features and socio-cultural considerations. Questions of "airport art", acculturation, and textile design, and the African art market will also be carefully investigated

**A-H 390 • 3, 6 credits**  
**Independent Study**

Intended to allow students to examine in depth a particular aspect of the history of art. Independent study is open to students who have had a minimum of four Art History courses. A proposal of study must be submitted to the instructor prior to enrollment.

**A-H 490 • 3, 6 credits**  
**Independent Study**

Same as above.

**A-H 900 • 3, 6 credits**  
**Contract Learning**

**Seminars**

A-H 400-409 • 3 credits  
Problems in Ancient Art

A-H 410-419 • 3 credits  
Problems in Medieval Art

A-H 420-429 • 3 credits  
Problems in Renaissance Art

A-H 430-439 • 3 credits  
Problems in Baroque Art

A-H 440-449 • 3 credits  
Problems in Modern Art

A-H 440 • 3 credits  
Problems in Modern Art : Art, 1945 to the Present.

A-H 450-459 • 3 credits  
Problems in American Art

A-H 460-469 • 3 credits  
Problems in Primitive Art

A-H 470-479 • 3 credits  
Problems in Oriental Art

A-H 480-489 • 3 credits  
Literature of Art

Students will deal with bibliography, research methods, and various approaches to Art History. They will pursue extensive research which will be presented to the class. Consent of instructor.

A-H 480 • Literature of Art :  
Historiography

A-H 481 • Literature of Art :  
Iconography

A-H 482 • Literature of Art :  
Artist's Biographies

## Visual Design Graduate School

### Visual Design Graduate School

The graduate program in visual design, leading to the Master of Fine Arts after two years of study, prepares qualified candidates for independent professional achievement in the area of visual design. Development of an individual point of view, significant cultural perception, and an understanding of absolute quality are stressed. Courses of study include aesthetics, calligraphy, color, communications, graphic design, design history, photography.

It is apparent that this graduate program would in all cases be tailored to the peculiar abilities and capacities of the student. As the plan is envisaged it would produce a master of fine arts who is genuinely a working and thinking individual, capable of continuing his own education.

Applicants for admission to the program must submit a portfolio of their work to the director of the graduate program. A portfolio consisting entirely of slides is not acceptable. Although a personal interview is desirable, a written explanation of the projects shown in the portfolio, describing the intention, the technique used, and some evaluation of the result may be substituted.

If the candidate lacks certain prerequisites for the required graduate courses he will be asked to complete undergraduate work to make up this deficiency.

For further information write to the Director of Graduate Program, Design Department, College of Fine and Applied Arts





# Music Department

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## Faculty and Fields of Interest

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**Eleanor Carlson** (chairperson) •  
concert pianist

**Gene Crisafulli** • band

**Jacqueline Bazinet Cobert** •  
voice

**Josef Cobert** • conductor  
and flutist

**Stanton Davis** • jazz

**Phyllis Issacson** • chorus

**Vincent Luti** • composer



The Music Department offers courses in music history, theory and performance. Applied instruction in voice, piano and various orchestral instruments is available for academic credit. In addition, numerous performing ensembles provide opportunities for all members of the university community to participate in musical activities. Many of the department's offerings are also available through the Division

of Continuing Education. The Music Department sponsors faculty, student and guest recitals, choral, orchestral and band concerts, and operatic productions. Special programs for children, teachers and other groups are given to benefit the community at large. The Music Department is an active force in the cultural life of the university and the community.

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## Music Courses

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\*Course can be used to fill Humanities elective with approval of the department chairman in the student's field of major Courses without asterick can be utilized as free electives.



### History:

#### \*MUS 101, 102 • 3 credits Introduction to Music

This course is designed to present a basic music vocabulary and develop intelligent discrimination in the listener through study and analysis of outstanding works from Gregorian Chant to the present. Emphasis is also placed on the relationship of the historical development of music to parallel movements in art, drama, philosophical thought, etc.

#### \*MUS 103, 104 • 3 credits Survey of Western Music I, II

A course designed to give a broad view of music from the middle ages to the present. Listening and analysis will be stressed, but historical background will also be discussed. Prerequisite: MUS 107 or equivalent.

#### \*MUS 121, 122 • 3 credits Music and the Theater I, II

To open the world of music-drama, its social history, theatrical musical traditions and various conventions of performance. The interrelation of music and drama, its physical make-up (stage mechanics, set design, lighting design, costume design) and its development into a highly complex art form. Becoming aware of the important and special powers of music and the way it can lend a greater

force to drama. Guest lecturers on costume, scenic-lighting design and orchestral problems in music-theater.

#### \*MUS 235 • 3 credits Survey of American Music

A genesis and growth of American music from its inception to the present, including popular idioms.

#### \*MUS 237 • 3 credits Music of the Twentieth Century

A study is made in the trends in twentieth century, embracing analysis of representative works from the period and their relationships to the existing culture. Prerequisite: MUS 107.

#### \*MUS 238 • 3 credits Music and the Related Arts: Paris (1890-1930)

This course will emphasize the music of the period, but will also attempt to investigate its relationship to the other arts. Debussy for example, was labeled an impressionist because of the circumstances linking him to the impressionist painters. Debussy however, was also influenced by art nouveau and by the symbolist poets. Other styles to be explored will include Satie's connections with dadaism and surrealism and Stravinsky's close alliance with ballet.

Although listening to music will be of primary importance, art

slides, poetry readings, and films of ballets will be used as much as possible. Guest lecturers will also be called upon as the occasion arises.

**\*MUS 239 • 3 credits**

**Music of the Romantic Period**

A survey of the masterpieces of Chopin, Tchaikovsky and other nineteenth century composers.

**\*MUS 241 • 3 credits**

**Music of the Classical Period**

A study of the major works of Haydn, Mozart and Beethoven.

**\*MUS 243 • 3 credits**

**Music of the Baroque Period**

A study of the major stylistic developments in the music from 1600 to 1750. Monteverdi to Bach and Handel.

**\*MUS 327 • 3 credits**

**Survey of Choral Literature**

A specialized appreciation course that examines music for group singing—Gregorian chant, medieval Mass and Motet, Renaissance madrigals, motets, Baroque Oratorio, Bach Cantatas, Opera choruses of Monteverdi, Purcell, Gluck, Mozart, Verdi, twentieth century works with unusual harmonies, effects, etc. Lectures, listening, study and, where possible, live demonstrations will constitute the work.

**\*MUS 329 • 3 credits**

**Survey of the Symphony**

The development of the symphony as traced from the eighteenth century to the present day.

**\*MUS 331 • 3 credits**

**Beethoven**

Knowledge of the genius through his compositions.

**Theory**

**\*MUS 107 • 3 credits**

**Fundamentals of Theory**

A course designed for beginners with no theory background. The study of the elements of music, systems of sounds, pitch, meter, rhythm, note values, dynamics, manuscripts, etc. Identification, nomenclature, and performance will be carried out through a programmed text, lecture and practical application through singing and playing. This is a foundation course for further courses in theory and composition.

**\*MUS 109, 110-209, 210-309,**

**310-409, 410 • 3 credits**

**Music Skills**

An intensive study and practice of the reading, performance, notation and dictation of rhythm, meter, intervals, melody, and chords. Useful for all singers and instrumentalists.

Prerequisite: MUS 107

**\*MUS 111, 112-211,**

**212 • 3 credits**

**Harmony**

A study of tonal harmony, triads, seventh chords, chord grouping and voice leading. Simple two part counterpoint is also covered. A course in tonal musical theory. Work will be done in such areas as modulation, altered chords, harmonic structure, 9th, 11th, and 13th chords, modal harmony, chromatic harmony, etc. Prerequisite: MUS 107

**\*MUS 113, 114 • 3 credits**

**Counterpoint I, II**

A study of the literature and techniques of combining two and three lines of music into a polyphonic texture. Although a theory-composition course, students will also gain an appreciation of and insight into a western musical texture that

has produced effective music from medieval organum to American Jazz.

Prerequisite: MUS 107

**\*MUS 115 • 3 credits**

**Jazz Theory**

A more enlightened insight to the structure of Jazz through a study of its harmonic, melodic and rhythmic techniques.

Prerequisite: MUS 111, 112-211, 212 or permission of instructor.

**\*MUS 242 • 3 credits**

**Black American Music**

A general survey of Black-American music in the U.S. traced from its origins to the present. The course is intended to introduce the student to the vast and rich expanses of black musical culture, both from a musical and socio-historical standpoint. The emphasis of the course will be on jazz, its history, and an analysis of the contributions of its major innovative figures.

**\*MUS 117, 118 • 2 credits**

**Elementary Jazz Improvisations I, II**

A performance course introducing the student to some elementary techniques of jazz improvisations on their own instruments. No jazz experience required.

Prerequisite: MUS 107 (or equivalent), a performing instrument, triadic harmony, and moderate reading ability.

**\*MUS 333, 334 • 3 credits**

**Advanced Theory Composition I, II**

A course in applied theory covering new techniques from 1910 to 1950. These techniques will be used in a compositional way. Advanced standing in theory required for admission.

**Applied Music:**

**MUS 119 • 3 credits**

**Introduction to Vocal Pedagogy**

A preparatory course in techniques of voice production through demonstration, observation, and active participation. By permission of instructor.

**MUS 149, 150-249, 250-349,**

**350-449, 450 • 3 credits**

**Applied Voice**

Weekly private lessons. By permission of instructor.

**MUS 151, 152-251, 252-351,**

**352-451, 452 • 3 credits**

**Applied Piano**

Weekly private lessons. By permission of instructor.

**MUS 153, 154-253, 254-353,**

**354-453, 454 • 3 credits**

**Applied Orchestral Instruments**

Professional instruction in orchestral instruments can be offered for credit to qualified students (not beginners) by audition and permission of the instructor. Until SMU offers a degree program in music, the variety of instrumental instruction will be limited. At present, instruction is available in flute and brass instruments.

**MUS 245, 246-345,**

**346-445, 446 • 3 credits**

**Applied Vocal Repertoire**

Various interpretive styles of composers in song and music-drama-literature: diction, tempo, phrasing, dynamics, aesthetics, audience rapport. (Piano accompaniment available to students.)







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### Performance Ensembles

The performance ensembles are open to all university students subject to the approval of the director. They may be utilized as free electives and repeated for credit.

**MUS 155, 156-255, 256-355, 356-455, 456 • 1 credit**

#### SMU Chorus

Open to students, staff and faculty. Sight-reading not required but minimal experience in group singing desirable.

**MUS 157, 158-257, 258-357, 358-457, 458 • 1 credit**  
**Orchestra**

This course provides opportunity for qualified students to perform major standard and contemporary orchestral literature. One credit (1) per semester is granted, but it may be cancelled for less than one year's participation at the discretion of the conductor. Instruments are available for qualified students.

Note: Although anyone may participate in Orchestral Activities, credit is only obtainable if you are a full-time student enrolled in a degree program at SMU.

**MUS 159, 160-259, 260-359, 360-359, 460 • 1 credit**  
**Concert Band**

This course provides an opportunity for qualified students to perform major standards and contemporary band literature. One credit (1) per semester is granted, but it may be cancelled for less than one year's participation at the discretion of the conductor.

Instruments are available for qualified students.

Note: Although anyone may participate in Band Activities, credit is only obtainable if you are a full-time student enrolled in a degree program at SMU.

**MUS 161, 162-261, 262-361, 362-461, 462 • 1 credit**  
**Small Instrumental Ensembles**  
A performing organization devoted to the chamber music repertoire of all stylistic periods.

**MUS 163, 164-263, 264-363, 364-463, 464 • 1 credit**  
**Stage Band**

Performance of contemporary "Big Band" literature built on the elements of jazz. By permission of instructor.

**MUS 247, 248-347, 348-447, 448 • 3 credits**  
**Music Theater Performance**

How a musical stage composition is developed and generated by a single plan of composer, conductor, performer and stage director. Learning the language of the theater and the interrelation of drama, theater, opera, and musical theater.

An opportunity for vocal students and music-drama enthusiasts to participate in production at a high level of performance standards.

Note: Qualified applicants will be given the opportunity to perform in the production given during the academic year.

In Music Theater courses students participate in all phases of theater production preparation. Workshops in Music and Performance are offered along with selected music courses during the summer through the SMU Evening Sessions (Continuing Education). For further information please contact the SMU Music Department office.



## Theater Arts

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### Faculty: Angus Bailey

Courses in Theater Arts are concerned with the history and theory as well as the craft of the theater. Presently, the courses are elective to the general student body of the University and can be used to fulfill humanities elective requirements in many degree programs. Theatrical productions are used as workshop experiences for the courses.

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### Theater Arts Courses

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#### TA 100 • 3 credits Theater Workshop

Provides an introduction to theater practice in terms of both acting and stagecraft. It also offers the possibility of working with production in front of audiences and some insight into the complexities of theater management.

#### TA 101 • 3 credits Theater Workshop

A continuation of TA 100.  
Prerequisite: TA 100

#### TA 200 • 3 credits Theater Workshop

Provides those who have already completed the introductory course with more advanced theatrical experience as well as with an opportunity to learn the rudiments of directing. Students in both courses participate in the full six-production theatrical season at SMU as well as in the student productions sent to area coffee houses and secondary schools.

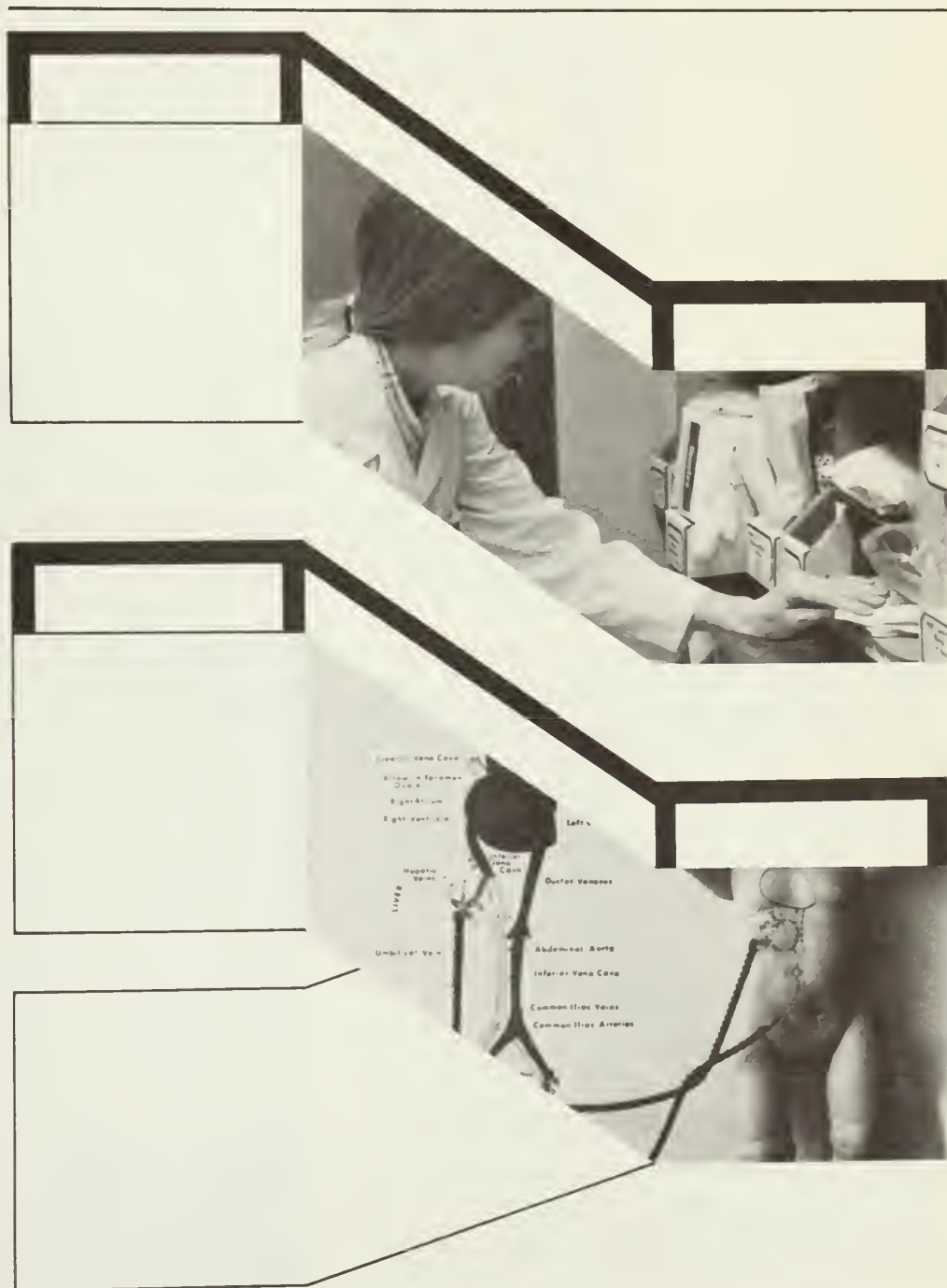
Prerequisite: TA 101

#### TA 201 • 3 credits Theater Workshop

A continuation of TA 200.  
Prerequisite: TA 200.









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### Faculty and Fields of Interest

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#### Department of Community Nursing:

**Ellen Abrams** • psychiatric nursing

**Marion M. Chace** (chairperson)  
• psychiatric nursing

**Judith Clark** • maternal - child health

**Peggy Greaves** • pediatric nursing

**Ann Marie Hedquist** • nutrition

**Victoria M. Hosford** • community health nursing

**Maureen Hull** • community health nursing

**Gertrude Maney** • community health nursing

**Joan Pisarczyk** • community health nursing

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#### Department of Institutional Nursing:

**Ellen Christian** • maternal-child nursing

**Arlene D'Arezzo** • medical-surgical nursing

**Mary Ann Dillon** • pediatric nursing

**Elaine Hatch** • medical-surgical nursing

**Janice McKeachern** • rehabilitation

**Mary Nanopoulos** • medical-surgical nursing

**Rita H. O'Neill** (chairperson)  
• rehabilitation

**Ann Tschirch** • medical-surgical nursing

The College Of Nursing is approved by the Massachusetts Board of Registration in Nursing and accredited by the National League for Nursing



### The Profession of Nursing

The term "nurse" encompasses a wide range of roles, from the nurse whose task it is to give routine care under direct supervision, to the nurse who has for function to improve patients' care through research, experimentation, writing and teaching. The preparation of nurses for their specific role in nursing takes place in a variety of institutions. Professional nurses are educated in colleges or universities. They are prepared to practice nursing in a variety of settings, including community health agencies. Utilizing a broad background of scientific principles, they are able to: identify and solve nursing problems, plan, administer and evaluate nursing care. They are prepared to direct and coordinate the nursing care given by other nursing personnel and auxiliary workers. They are prepared, in collaboration with

others, to develop individual, family and community nursing programs designed to promote health and prevent disease.

A sound liberal education is the foundation upon which a nursing major is built. A program for professional nurses is planned to develop personal qualities necessary to expand intellectual and cultural horizons, to live competently in society and to mature as an individual. The graduates of such programs are eligible to take the examination for licensure to practice as registered nurses, and also for study toward advanced degrees.

### Objectives

The Southeastern Massachusetts University College of Nursing aims at graduating nurses able to:

1. Give professional nursing care; make a searching nursing diagnosis; set immediate, intermediate and long-range goals for nursing care; plan this nursing care; implement this plan or delegate its implementation to the proper person; and, evaluate the adequacy of the whole nursing process.
2. Prevent illness through health education and promote rehabilitation, helping patients to live as fully as possible within the limitations imposed upon them by chronic illness, emotional maladjustment or adverse conditions within the environment.
3. Mobilize, in collaboration with other health professionals, the resources of institutions and of the community, to insure

better nursing care for all those who need it.



## Nursing Curriculum

The nursing curriculum proper is two years and one summer long, based upon two years of pre-nursing college study, and leads to the Bachelor of Science in Nursing Degree.

First Year			Semester Credits: First Second	
Pre-Nursing Program				
E	101	102	Freshman English	3 3
BO	151	152	Fundamentals of Biology	3 3
CH	101	102	Chemistry	3 3
or	151	152	Social Sciences*	3 3
			Free Electives**	3 3
				15 15
Second Year				
BO	221	222	Anatomy-Physiology	4 4
	223	224		
BO	252		Medical Microbiology	4 4
			Social Sciences*	3 3
			Free Electives**	6 6
			Humanities***	3 3
				14 16

\*Social Sciences. All students must have at least one course of Psychology and one of Sociology. The balance for social sciences requirements (two additional courses) may be taken in Psychology, Sociology, Political Science, Economics of Education.

\*\*Free Electives. Students may elect any available course for which they qualify. Pre-nursing students may wish to select their elective courses so as to be eligible for another major of their choice, should they change their career plans.

\*\*\*Humanities. Courses in English, Philosophy, History, Art History, Music Appreciation and Modern Languages fulfill the Humanities requirement.

Third Year			Semester Credits: First Second	
Nursing Program				
NU	301		Foundations of Professional Nursing	12 12
NU	302		Nursing in Developmental and Pathological Crises	3 3
			Free Electives	15 15
Fourth Year				
NU	401		Nursing of the Person in the Hospital	12 12
NU	402		Nursing of the Person in the Community	3 3
			Free Electives	15 15
Total: 120 credits				

**Note:** At the present time, the nursing curriculum is being revised by the faculty. The summer course NU 201, 202, Foundations of Professional Nursing, has been eliminated. This revision may mean adjustments in the nursing courses and in the total number of credits required for graduation.

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## General Information: Admissions

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### To the Pre-Nursing Program

Students are admitted to the Pre-Nursing Program through the University Office of Admissions. Applicants to the Pre-Nursing Program, in addition to fulfilling the requirements for all University students, must have had a secondary school program including at least three units of mathematics and two laboratory courses of natural sciences.

### To the Upper Division Nursing Curriculum

Students are admitted to the upper division nursing courses after they have successfully completed the lower division pre-nursing courses requirements, or transferred credits have been evaluated as equivalent.

In order to be admitted to the nursing major, a pre-nursing student must have completed all prerequisites, and obtained a cumulative grade point average of 2.0. The records of applicants to the nursing major, both pre-nursing and transfer students, will be reviewed by the nursing faculty at the beginning of the second semester of the sophomore year. *Admission qualified applicants to the nursing major may be limited by availability of faculty and clinical facilities.* In the event that the number of qualified applicants exceeds available resources, students will be selected on the basis of academic standing.

### Admission of Transfer Students and Registered Nurses

Registered Nurses and students having attended other colleges must meet the same entrance requirements as those who apply to the pre-nursing program.

### Registered Nurse Students

Registered nurses holding either a nursing diploma or an Associate Degree may supplement their basic professional education and obtain a B.S. in Nursing degree at the Southeastern Massachusetts University College of Nursing.

Credits obtained in another college, fitting the pre-nursing program, are transferred. In addition to being able to earn credits by successfully writing the appropriate CLEP examinations open to all University students, registered nurses may write tests offered by the Department of Biology and, if successful, be excused from the courses in Anatomy and Physiology, and Microbiology, and be granted the corresponding credits.

Registered nurses after they have successfully completed the equivalent of NU 301 are excused from taking NU 302 and are given the corresponding credits, and allowed to register for the senior year courses.

### Health Policies

Students admitted to the nursing program are expected to have a complete physical examination and the appropriate immunizations during the spring preceding their junior and/or senior year clinical courses.

Each nursing course must be satisfactorily completed with a C-(1.7) or better in order to enroll in another nursing course.

Incomplete grades will be handled on an individual basis. A failed course may be repeated once. A subsequent failure in any nursing course will result in a

dismissal from the College of Nursing. Repeating students may enroll in the previously failed course on the basis of space available.

A minimum of C-(1.7) is required for passing in each nursing course. An overall point average of C(2.0) is required for graduation. A C(2.0) average is also required in the nursing major for graduation. Each nursing course consists of two components: 1) theory, 2) practice. The clinical practice component of each course is graded on a pass/fail basis. A failure in clinical practice automatically entails the failure of both components of the course.

The letter grade earned in the theoretical component for each course is the grade recorded for both components and submitted to the Registrar.



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## Facilities of the College of Nursing

The student nurses obtain their clinical experience in the hospitals and health agencies of this area. St. Luke's Hospital in New Bedford, St. Anne's, Union-Truesdale Hospital in Fall River; the Highland Heights facilities for the care of long-term patients in the greater Fall River and the New Bedford areas, and the Veterans' Hospital in Brockton have opened their facilities to the SMU nursing students. In addition to learning the nursing care of hospitalized patients, the student nurses learn to care for patients in their home, in institutions providing ambulatory care, and in a variety of community agencies. In all instances, the SMU nursing faculty is responsible for the teaching and guidance of SMU students.

The SMU student nurses are led toward the achievement of the objectives set by the college through three levels of complexity of nursing care.

At the first level, the simplest, the students are taught to interact with the patient through the successive phases of the nursing process. At the completion of this level, they should have acquired the skills in observation and communication necessary to an assessment of the patient's nursing needs; they should be able to set concrete and realistic goals of nursing care, and to devise a plan of action susceptible of leading to the attainment of these goals. The students are expected to have acquired the basic nursing

skills necessary to implement the nursing care plan. Finally, the students should be able to evaluate the outcome of their nursing care in the light of goals previously set; they would, then modify the steps of the nursing process accordingly, or set more ambitious goals.

At the second level, the students are taught to interact with the physician and with the patient's family as well as with the patient. The resources afforded by these persons in the patient's behalf are utilized by the nurse at each stage of the nursing process. It is expected that at the completion of this level, the students will be able to give intelligent nursing care to acutely ill patients and to patients needing sup-

portive nursing care, to hospitalized patients and to patients in their homes.

At the third and most complex level, the students are taught to interact with those persons constituting all levels of the hospital structure, and with those responsible for the social and welfare agencies having a bearing upon the distribution of health care. It is expected that at the completion of this level, the students will attempt to mobilize the resources of the health care systems for the improvement of nursing care. The professional nurse should be not only able to give good nursing care, but also responsible for insuring that it is made available to those who need it.

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## Nursing Courses

### NU 301 • 12 credits Foundations of Professional Nursing

Focuses on the nursing process: patient assessment, formulation of a nursing diagnosis, setting goals with and for patients, for nursing care, and planning, implementing and evaluating care in light of the goals. Study of basic physiological alterations which require nursing intervention. Clinical experience in facilities for the care of patients with long-term and chronic illness, and/or disabilities. Offered during the first semester of the junior year.

**NU 302 • 12 credits  
Nursing in Developmental and/or Pathological Crises**  
The student applies the nursing process to the care of persons of all ages in whom developmental or pathological changes

have produced or may produce illness. The student will assist the individual and family to cope with the threat or stress of illness in collaboration with the physician and other appropriate health team members. Clinical experience in a variety of institutional and other community agencies offered during the second semester of the junior year. Prerequisite: NU 301

### NU 401 • 12 credits Nursing of the Person in the Hospital

The student is taught to bring the resources of the hospital, through the application of the nursing process, to the service of patients whose conditions have made it necessary to utilize hospital services. The role of the professional nurse as a member of the health team is emphasized. The student is expected to show initiative and autonomy and to

be an effective member of the health team. Students are expected to study in depth one problem related to the delivery of health care in the hospital or the effect of hospitalization on the patient. Clinical experience is in a variety of areas in an acute care hospital. Offered during the first or second semester of the senior year. Prerequisite: NU 301, NU 302.

### NU 402 • 12 credits Nursing of the Person in the Community

The student is taught to bring community resources to the service of persons who are under stress of a health-illness nature in their home, or other community setting, through the application of the nursing process. Clinical experience with community health agencies, organizations and groups where the solution of health problems is

sought. Students are expected to study in depth one facet of such a problem from the nursing point of view. Offered during the first or second semester of the senior year. Prerequisite: NU 301, NU 302.

Division of Continuing  
Studies and Special  
Programs





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### Higher Education for Adults

The dominant purpose of the Division of Continuing Studies is to identify and serve the educational needs of the adult southeastern Massachusetts community. All courses of study leading to degrees in the undergraduate and graduate programs of the Division are approved by the faculties involved and are governed by the general University academic standards.

Degree programs have been developed in the areas of business administration and liberal arts. Undergraduate degrees are offered in Management, Accounting, History, English, Psychology, Political Science, Sociology and Humanities and Social Sciences. Courses are offered on a part-time basis at times convenient to adult students. Students may enroll in a single course or a program leading to a Bachelor of Arts degree, a Bachelor of Science degree or a Master of Business Administration, Art Education, Medical Laboratory Science and Bilingual Education.

Students who do not wish to pursue a degree may take one or more courses according to their interests. The credit courses may be applied to a degree program at a later date; non-credit offerings may be combined for a certificate of completion.



### Open Enrollment

Anyone who has completed high school or has the equivalent of a high school education may register for courses in the Division. No transcripts, diplomas or other documents are necessary to register for courses.

### Degree Candidacy

Anyone over 25 who has successfully completed 30 credits of course work at SMU or any other accredited higher education institution is eligible to be an undergraduate degree candidate. Applicants not meeting either of these requirements may apply and will be considered.

Application to degree candidacy may be made directly through the Division of Continuing Studies. Applications and full information will be mailed on request.

### Graduate Degrees

Graduate degree programs in the Division of Continuing Studies are offered in Bilingual Education (MBE), Business Administration (MBA), Medical Laboratory Science (MLS), and Art Education (MAE). For information on graduate programs, contact the Dean of the Graduate School in the Administration Building.

### Undergraduate Programs

The degree programs and academic program in Continuing Studies are designed to meet the needs of those who cannot pursue a full-time day schedule. You may arrange programs and courses may be arranged to complete a degree at an individualized pace, within various time-frames.

At present, the Division offers all the necessary courses to meet undergraduate degree require-

ments as defined elsewhere in this catalogue in the following disciplines:

College of Arts and Sciences;  
English,  
History,  
Humanities and Social  
Science,  
Psychology,  
Sociology.

College of Business and Industry;  
Business Administration,  
Accounting Option,  
Management Option.

In addition, students may make arrangements to pursue a specialized program, such as multidisciplinary studies, covering several subject areas. Class schedules may also be arranged to include occasional day school courses. Registration in the day school is, however, quite restricted, primarily open to those who are day school degree candidates.

### Evening and Summer Sessions

The academic program in continuing studies is offered primarily in the Fall and Spring in the evening for the convenience of busy schedules of working and other adults. The evening schedule continues through the first and second summer session. The summer session also contains a sequence of morning and afternoon courses offered within the framework of established university degree programs.

### Professional and Personal Resource Development Program

In the Spring of 1977 continuing studies initiated a cluster of workshops and training programs designed to encourage individual professional advancement and personal growth. Cultural enrichment activities are included in this offering.

The Professional and Personal Resource Development Programs will be offered in the Fall, Spring and Summer sessions. These programs are offered in addition to the established degree courses. Credit for participating in these programs is defined in non-academic terms, often leading to a certificate of successful participation, continuing education units, and professional promotion and recognition.

### Summer Music Institute and Festival

Five successful summer programs have established the Summer Music Institute as an outstanding national cultural event and a permanent exciting program at SMU. The Summer Music Institute features an Opera Program under the direction of world-renowned impresario Boris Goldovsky, an extensive chamber music program under the direction of Professor Josef Cobert and specialized workshops in piano, ballet, band, Suzuki violin and Orff music for children. The Summer Music Institute attracts young singers of growing national renown who train and perform with maestro Goldovsky. In cooperation with the chamber orchestra and the other activities, a strong and varied selection of programs is offered during July.

### Bicentrad

Three years of successful planning and development have led to the establishment within the Division of Continuing Studies of a Masters degree program in Bilingual and Bicultural Education. Support of federal funds has enabled the establishment of this center under the name of Bicentrad with a wide-ranging and growing array of academic programs and non-credit training in languages, education, over-

seas study, cross-cultural awareness, study and research of America as a multi-ethnic society and of the diverse ethnic origins of America.

### The Institute on Health and Long Life

The Institute on Health and Long Life was formed in 1974, as an independent activity within the continuing studies, by a group of community and university people interested in improving information, research, training programs and services for the aging. While the primary emphasis of the Institute in its formative years has been on programs and services for elders, the central concern of the Institute is on aging as a developmental process. The Institute has sponsored academic courses such as Elder Affairs and American Life and Politics, workshops (for example, Sexuality after the Middle Years), and training programs (including community training for Elder Affairs and training women to counsel older women).

The Institute membership is open to all in southeastern Massachusetts. Its programs are offered on diverse subjects and to a variety of students and community and professional participants. In most Institute-sponsored academic courses, elders 59 years of age and older may register without paying tuition. Further information about the Institute and its activities may be requested from the Staff Coordinator, Institute on Health and Long Life, Division of Continuing Studies.





### **Labor Education Center**

Collaborative efforts encouraging labor union leaders and university faculty and staff have resulted in the recent establishment at the University of the Labor Education Center. The center's advisory and super-advisory committee has sponsored several workshops and other activities. Implementation of a wider range of support services for union members and research and study of the labor movement in America and activities designed to improve the quality of working life is anticipated in the next phase of the development of the center.

### **Young People's University**

While programs in continuing studies are essentially for adults, an exciting group of activities for children have been offered; these include Art Workshops for Toddlers through Teenagers, workshops in Puppetry, Kite Making, Magic, and a children's film series. The Schinichi Suzuki violin program will continue to be available for young people. The growth of these programs under the heading of Young People's University (YPU) will be determined by community interest and participation.

### **Continuing Studies Student Government**

In April 1977 the Board of Trustees approved the Constitution to establish the Continuing Studies Student Government. CSSG plays a governing role for evening and summer session students analogous to the Student Senate for day school students. All continuing studies students may participate in elections for the CSSG board and may become board members. Information about CSSG may be obtained from the Staff Advisor in the Division of Continuing Studies office.

### **Continuing Studies Advisory Committee**

In the Fall 1976 a student faculty advisory committee was created for the Division of Continuing Studies. CSAC consists of 5 faculty, 5 students and 1 administrative member. The Director of Continuing Studies is an ex officio non-voting member. The faculty members are chosen by the faculty federation, the student members are chosen by the Continuing Studies Student Government and the administrative representative is appointed by the President.

### **Teacher Certification Courses**

Individuals choosing to meet state teacher certification requirements may register for courses offered in the Continuing Studies courses in the Evening Session or the Summer Session by the Education Department. These courses apply as electives in the program leading toward a degree in the Humanities and Social Sciences as well as towards teacher certification. An individualized program, such as multi-disciplinary studies, integrate education courses with courses in other disciplines.

Information regarding the Massachusetts Teacher Certification requirements and application forms are available at the Continuing Studies office or the Education Department.

### **Independent Study**

Upper Division students (54 credits or more) may do independent study for up to six (6) hours of credit on recommendation of the faculty sponsor and the approval of the Director of Continuing Studies. The student must submit a written proposal of study which is the guide for evaluating the student's work.

The student will be responsible for meeting the requirements

of the independent study as outlined and approved. The faculty sponsor will assume responsibility for coordinating the independent study, evaluating its results and determining an appropriate grade.

### **CLEP**

Credit is granted upon successful completion (above 50 percentile score) of appropriate examinations in the College Level Examination Program (CLEP). Depending on degree requirements, CLEP credits may be used to satisfy course and distribution requirements or as free electives. The exams are given monthly at SMU by the Division of Continuing Studies. Application in the Continuing Studies Office in advance is necessary to take the exams.

### **Advisors**

Student advisors are available by appointment through the Continuing Studies office to assist the student in planning a program suitable to general educational and career objectives.

### **Contract Learning**

Contract Learning, which enables students to earn academic credits for experiential learning projects formulated with the advice and consent of faculty, is open to Continuing Studies degree candidates. The program is open to all SMU degree candidates who, in general, have completed 54 credits. Students with fewer credits may establish capability for a proposed project and may participate in the program. For a complete description of this program see the general information section of this catalogue.

### **Tuition and Fees**

In Continuing Studies courses, tuition is \$30.00 per undergraduate credit and \$45.00 per gradu-

ate credit except where otherwise stated in the course list. Auditors to credit courses are responsible for the same tuition as those taking the course for credit. All registrants in credit courses must pay the general student fee at the rate of \$3.00 per credit (\$20 maximum) and the registration fee of \$10. Exceptions to this rate may be published in the official course list. Registrants in non-credit activities are not subject to the general student fee or the registration fee. Fees are refundable only if the student's registration is nullified by course cancellation. All payments for tuition and fees must be made to the Bursar by check or money order.

Program fees for non-academic activities vary with the activity. For the non-credit programs, a single participation fee is charged, no registration or student fees are paid. Fees for non-credit activities are published in advance and payment is in advance.

### **Laboratory and Studio Fees**

Whenever it is appropriate to the activity, a laboratory or studio fee may be charged. Such fees are based on the cost of supplies, equipment, material or models pertaining to the activity. Laboratory and studio fees are refundable only when the course is cancelled.

### **Withdrawals and Refunds**

Students who are compelled to withdraw from Continuing Studies classes for any reason are eligible for 90 per cent refund during the first one-sixth of classes. No refunds of tuition are made after that. Students whose class is cancelled for the semester are entitled to full refund of tuition and fees if application is made at the Bursar's Office before the final session of the class.

## Financial Aid for Continuing Studies Degree Candidates



### **BEOG**

The Basic Educational Opportunity Grant (BEOG) is the primary funding source for Continuing Studies degree candidates who have financial need. The grant applications are available in the office of Continuing Studies and are processed by the federal government. Aid in filling out the forms can be obtained at the Educational Opportunity Center on Spring and County Streets in New Bedford. The grant is processed for any student who is a degree candidate and is enrolled for at least six credits per semester. Unused portions of the grant may be used only for the months of May and June for the summer session.

### **National Direct Student Loans Guaranteed Student Loan Program**

These federally supported loans are available to students who

are degree candidates carrying at least one-half the normal academic schedule of 6 credits. Loans under these programs are arranged by the student directly with participating banks or other financial institutions.

### **Veterans' Benefits**

Students in Continuing Studies who need to ascertain eligibility for veterans' benefits should contact the Veterans' Affairs Office in the Administration Building or call extension 711. Since the Division of Continuing Studies is supported fully by participants' tuition and fees and not by tax dollars, veterans are subject to the same fees, tuition and payment schedules as other students.

### **Accident Insurance**

All students taking courses for credit in the Division of Continuing Studies are now covered under the SMU Limited Basic

Accident Coverage Plan. Coverage is limited to injuries sustained on campus, traveling to or from the University and the student's home residence, attending or participating in any school-sponsored sports activity. The policy has a maximum benefit of \$6,500. Further information or claim forms may be obtained from the Health Office.

### **Transfer Credit**

Credit may be granted for work completed in other accredited schools, colleges or universities. A degree candidate who wishes to receive transfer credit should have an official transcript sent to the Division of Continuing Studies where the course work will be evaluated and appropriate credit awarded not exceeding 1/2 the total credits required for graduation.





## Affirmative Action Policy



Southeastern Massachusetts University is an Affirmative Action/Equal Opportunity Employer. The University particularly encourages applications from members of minority groups and women.

The University's Affirmative Action Plan is intended to guarantee equality of opportunity in employment and education, and to reduce the under-representation and under-utilization of minority groups and women at the University. For all categories of employment, our objectives are to meet or to exceed our projected goals and timetables while, at the same time, providing new opportunities for career development.

Similarly, for all of the University's educational programs, our objectives are to eliminate all previous barriers which may have existed in the past and achieve

a representation of minority groups and women in the student body which reflects their current availability and interests. Furthermore, these individuals will be encouraged to take full advantage of all University resources which might enhance their educational exposure.

# Faculty

## Abrams, Ellen

Assistant Professor of Community Nursing (1972); B.S. 1969, Salve Regina College; M.S. 1972, Boston University

## Adams, Dickinson W.

Associate Professor of History (1965); B.A. 1955, Harvard College; Ph.D., 1970, Brown University

## Ahearn, Marie L.

Professor of English (1965); A.B. 1953, Regis College; Ed.M. 1958, Tufts University; A.M. 1961, Boston College; Ph.D. 1965, Brown University

## Ali, Shaukat

Professor of Political Science (1970); B.A. 1942, M.A. 1945, M.P.A. 1964, University of Punjab, India; D.P.A. 1965, University of Southern California

## Anderson, Gordon F.

Professor of Mechanical Engineering (1967); Dean of the College of Engineering; Sc.B. 1948, Sc.M. 1951, Ph.D. 1962, Brown University. Registered Professional Engineer

## Argy, Dimitri

Professor of Mechanical Engineering (1967); Dip. Ing. 1946, National Institute of Technology, Athens, Greece; Dr. Ing. 1955, Aachen Institute of Technology, Aachen, Germany; Registered Professional Engineer

## Aruri, Naseer H.

Professor of Political Science (1965); B.A. 1959, American International College; M.A. 1961, Ph.D. 1967, University of Massachusetts

## Asato, Yukio

Associate Professor of Biology (1971); B.A. 1957, M.S. 1966, Ph.D. 1969, University of Hawaii

## Atwater, Nathaniel B.

Associate Professor of English (1969); A.B. 1959, M.A. 1964, Brown University; Ph.D. 1968, University of Exeter, England

## Bailey, Angus

Special Director of Dramatics (1966); A.B. 1939, Brown University

## Baker, Dwight L.

Professor of Chemistry (1965); A.B. 1933, Amherst College; M.A. 1934, Ph.D. 1940, Columbia University

## Bar-Yam, Zvi

Commonwealth Professor of Physics (1964); B.S. 1958, M.S. 1959, Ph.D. 1963, Massachusetts Institute of Technology

## Barry, Robert E.

Associate Professor of Design (1969); B.F.A. 1953, M.A.T. 1967, Rhode Island School of Design

## Bates, Alan H.

Associate Professor of Chemistry (1971); B.S. 1965, Allegheny College; A.M. 1966, Ph.D. 1970, Harvard University

## Beck, Clifford N.

Assistant Professor of Textile Sciences (1950); B.S. 1950, New Bedford Institute of Technology (SMU)

## Benesch, Howard I.

Assistant Professor of Psychology (1974); B.S. 1966, University of Maryland; M.A. 1971, Ph.D. 1974, University of Rhode Island

## Bento, Robert

Associate Professor of Physics (1961); B.S. 1956, Providence College; M.S. 1959, University of Maryland

## Berger, David E.

Assistant Professor of Economics (1972); B.S. 1963, Temple University; M.B.A. 1966, Drexel

Institute of Technology; M.A. 1968, Ph.D. 1972 Washington University

## Bessette, Russell R.

Professor of Chemistry (1968); B.S. 1962, University of Rhode Island; M.S. 1965, Ph.D. 1967, University of Massachusetts

## Biggelaar, Hans Van Den

Professor of Electrical Engineering (1963); B.S. 1948, M.S. 1950, E.E. 1951, University of Delft, Delft, Holland; Ph.D. 1970, Worcester Polytechnic Institute, Registered Professional Engineer

## Breuning, Siegfried M.

Professor of Civil Engineering (1971); M.S.C.E. 1949, Technical University, Germany; D.Sc. 1957, Massachusetts Institute of Technology and Harvard

## Bridgman, Howard A.

Professor of Economics (1966); A.B. 1933, Amherst College; A.M. 1941, Ph.D. 1953, Harvard University

## Brockett, Charles D.

Assistant Professor of Political Science (1973); B.A. 1968, Whittier College; Ph.D. 1973, University of North Carolina

## Bronstad, Joseph A.

Assistant Professor of Foreign Languages and Literature (1973); B.A. 1966, Lawrence University; M.A. 1968, University of Wisconsin; Ph.D. 1975, University of Connecticut

## Brown, Howard H.

Associate Professor of Business Administration (1973); B.S.E.E. 1956, Worcester Polytechnic Institute; M.B.A. 1966, Northeastern University; D.Ed. 1974, Boston University

<p><b>Brush, Hamilton M.</b> Associate Professor of Education (1971); B.A. 1942, M.A. 1947, Yale University; M.Ed. 1953, University of Cincinnati; Ed.D. 1976, University of Massachusetts</p> <p><b>Bush, John E.</b> Associate Professor of Sociology (1973); B.A. 1950, Delaware State College; M.S. 1954, Westminster College; M.A. 1968, Ph.D. 1976, University of Pittsburgh</p> <p><b>Butler, Martin J.</b> Associate Professor of History (1963); B.A. 1956, Providence College; M.A. 1957, Boston College; Ph.D. 1972, Pennsylvania State University</p> <p><b>Campbell, Allan L.</b> Associate Professor of Civil Engineering (1962); B.S. 1951, Northeastern University; M.S. 1966, University of Rhode Island; Registered Professional Engineer</p> <p><b>Campbell, Ronald A.</b> Associate Professor of Biology (1971); B.S. 1965, Roanoke College; M.A. 1967, University of Richmond; Ph.D. 1971, Iowa State University</p> <p><b>Carey, Ann T.</b> Associate Professor of History (1971); Chairperson, Department of History; B.A. 1957, M.A. 1959, Smith College; Ph.D. 1972, University of Rochester</p> <p><b>Carlson, Eleanor</b> Associate Professor of Music (1973); Chairperson, Department of Music; B.M. 1959, Oberlin Conservatory; M.M. 1960, Indiana University; D.M.A. 1974, Boston University</p> <p><b>Caron, Paul R.</b> Professor of Electrical Engineering (1970); B.S. 1957, Bradford Durfee College of Technology (SMU); M.S. 1960, Ph.D. 1963, Brown University; Registered</p>	<p>Professional Engineer</p> <p><b>Caruso, John L.</b> Associate Professor of Psychology (1972); A.B. 1968, Fairfield University; M.S. 1970, Ph.D. 1972, University of Pittsburgh</p> <p><b>Cass, Walter J.</b> Professor of Education (1948); A.B. 1943, Northeastern University; M.A. 1947, Ed.D. 1967, Boston University</p> <p><b>Chace, Marion M.</b> Associate Professor of Community Nursing (1974); Chairperson of Community Nursing; B.S. 1951, M.S. 1951, Boston University</p> <p><b>Chandy, John A.</b> Professor of Mathematics (1965); B.S. 1954, Kerala University, India; M.A. 1962, Ph.D. 1965, Boston University</p> <p><b>Chen, Chi-Hau</b> Professor of Electrical Engineering (1968); B.S. 1959, National Taiwan University, Taipei, Taiwan; M.S. 1962, University of Tennessee; Ph.D. 1965, Purdue University</p> <p><b>Christian, Ellen G.</b> Assistant Professor of Institutional Nursing (1974); B.S. 1969, Boston University; M.S. 1973, University of Colorado</p> <p><b>Clark, Judith</b> Assistant Professor of Community Nursing (1973); B.S. Ed., Fitchburg State College; M.S. 1973, Boston University School of Nursing</p> <p><b>Cleare, Julie</b> Associate Professor of Psychology (1971); B.A. 1961, Seton Hall College; M.A. 1963, Ph.D. 1968, Fordham University</p> <p><b>Cleffi, Americus J.</b> Assistant Professor of English (1966); B.A. 1953, M.A. 1956,</p>	<p>University of Missouri</p> <p><b>Cloutier, Edward H.</b> Associate Professor of Textile Sciences (1947)</p> <p><b>Cobert, Jacqueline Bazinet</b> Visiting Lecturer in Music/Voice (1965); New England Conservatory</p> <p><b>Cobert, Josef</b> Professor of Music (1964); Diploma 1949, Paris National Conservatory; B.M. 1957, M.Mus. Ed. 1958, Boston University; D.M. 1972, Florida State University</p> <p><b>Cormier, Edward A.</b> Professor of Business Administration (1958); B.S. 1948, Providence College; Ed.M. 1955, Boston University; Certified Public Accountant</p> <p><b>Cory, Lester W.</b> Associate Professor of Electrical Engineering (1963); B.S. 1963, Bradford Durfee College of Technology (SMU); M.S. 1970, Northeastern University</p> <p><b>Counsell, Alden W.</b> Associate Professor of Mechanical Engineering (1953); B.S.M.E. 1949, Northeastern University; Registered Professional Engineer</p> <p><b>Creamer, David J.</b> Associate Professor of Mechanical Engineering (1964); B.S. 1958, Bradford Durfee College of Technology (SMU); M.S. 1960, University of Massachusetts; Registered Professional Engineer</p> <p><b>Crisafulli, Gene</b> Visiting Lecturer in Music (1975); B.M. and B.M.E. 1971, Hartt College of Music; M.M. 1973, Yale School of Music</p> <p><b>Crowley, Michael</b> Associate Professor of Mathematics (1958); B.S. 1947, M.A.</p>	<p>1949, Boston College</p> <p><b>Cummings, Herbert P.</b> Professor of Fine Arts (1966); B.F.A. 1951, Washington University; M.A. 1952, Indiana University</p> <p><b>D'Arezzo, Arlene</b> Assistant Professor of Institutional Nursing (1972); B.S. 1960, M.S. 1971, Boston University</p> <p><b>Darden, Genevieve</b> Associate Professor of English (1967); B.S. 1938, M.A. 1967, Boston University</p> <p><b>Davis, Stanton</b> Visiting Lecturer in Music (1976); B.A. 1973, New England Conservatory of Music</p> <p><b>dePagter, James K.</b> Professor of Physics (1965); Chairperson, Department of Physics; B.S. 1951, University of Arkansas; Ph.D. 1958, Washington University</p> <p><b>Deveau, Roger J.</b> Assistant Professor of Business Administration (1970); B.S. 1965, Southeastern Massachusetts University; M.B.A. 1967, Texas A &amp; M University; D.Ed. 1976, Boston University</p> <p><b>Dias, Earl J.</b> Professor of English (1958); Chairperson, Department of English; A.B. 1937, Bates College; M.A. 1938, Boston University</p> <p><b>Dillon, Mary Ann</b> Associate Professor of Institutional Nursing (1971); B.S. 1966, Boston University; M.S. 1971, Boston College</p> <p><b>DiPippo, Ronald</b> Professor of Mechanical Engineering (1967); Chairperson, Department of Mechanical Engineering; Sc.B. 1962, Sc.M.</p>
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1964, Ph.D. 1966, Brown University

**Dowd, John P.**

Associate Professor of Physics (1967); S.B. 1959, Ph.D. 1966, Massachusetts Institute of Technology

**Downey, Catherine M.**

Professor of Education (1967); B.S. 1956, M.Ed. 1958, Boston College; Ed.D. 1963, Boston University

**Doyle, Jean**

Assistant Professor of Political Science (1973); B.A. 1965, Oberlin College; M.A. 1968, Ph.D. 1973, Boston University

**Dupre, Edmund J.**

Associate Professor of Textile Sciences (1942); B.S. 1948, North Carolina State College; M.Ed. 1957, Boston University

**Edgar, Robert Kent**

Associate Professor of Biology (1968); B.A. 1965, University of Virginia; M.S. 1968, Ph.D. 1970, Rutgers University

**Elfenbein, Morton H.**

Associate Professor of Psychology (1970); Chairperson, Department of Psychology; A.B. 1965, M.A. 1967, Ph.D. 1970, Boston University

**Elliott, Willoughby R.**

Associate Professor of Fine Arts (1967); B.F.A. 1965, Chouinard Art Institute; M.F.A. 1967, Rhode Island School of Design

**Esposito, Frances F.**

Professor of Economics (1967); B.A. 1961, St. Francis College; M.A. 1962, Fordham University; Ph.D. 1967, Boston College

**Estes, Lee Edward**

Professor of Electrical Engineering (1971); B.S.E.E. 1965, Southeastern Massachusetts

University; M.S.E.E. 1967, Ph.D. 1969, Worcester Polytechnic Institute

**Fain, Gilbert**

Professor of Electrical Engineering (1968); B.S.E.E. 1958, M.S.E.E. 1961, Ph.D. 1967, University of Rhode Island

**Felder, Joan**

Professor of Medical Technology (1962); Chairperson of Medical Technology; A.B. 1956, Barnard College; M.Ed. 1960, Boston University; M.S. 1968, Northeastern University

**Felix, Antone**

Assistant Professor of Foreign Languages and Literature (1967); B.S. 1950, Boston University; M.Ed. 1956, Bridge-water State College; M.A. 1967, New York University

**Fenaux, Louis E.F.**

Associate Professor of Chemistry

(1946); B.S. 1938, M.S. 1940, Boston College

**Fenton, John J.**

Assistant Professor of Chemistry (1973); B.A. 1962, Catholic University of America; Ph.D. 1972, University of Minnesota

**Fiocchi, Ferdinand P.**

Assistant Professor of Chemistry (1949); B.S. 1937, Tufts College

**Fisher, Elaine**

Associate Professor of Design (1973); B.F.A. 1961, Carnegie-Mellon University

**Fitzgerald, John J.**

Professor of Philosophy (1966); B.A. 1949, University of Notre Dame; M.A. 1953, St. Louis University; Ph.D. 1962, Tulane University

**Foley, Patrick Joseph**

Associate Professor of Education (1970); A.B. 1957, Northeastern University; A.M. 1958, Boston University; Ed.M. 1960, Harvard University; Ph.D. 1970, University of California

**Fontera, Richard M.**

Professor of Political Science (1971); Dean of Faculty (1971); A.B. 1956, Columbia College; A.M. 1958, Ph.D. 1964, New York University

**Freiberg, Pearlee**

Assistant Professor of Art History (1973); B.A. 1964, University of Illinois; M.A. 1969, Ph.D. 1975, University of Chicago

**Freier, Jerome**

Associate Professor of Mathematics (1965); B.S. 1939, City College of New York; Ph.D. 1958, New York University

**Friedberg, Robert Michael**

Associate Professor of History (1971); A.B. 1958, Boston University; M.A. 1968, Ph.D. 1972, University of Connecticut



**Fyock, Jack W.**

Assistant Professor of Political Science (1972); B.A. 1957, Indiana University of Pennsylvania; M.A. 1963, Ph.D. 1975, University of Connecticut

**Gamburd, Geraldine**

Associate Professor of Sociology (1971); B.A. 1948, University of Rochester; M.A. 1958, University of Michigan; Ph.D. 1972, Columbia University

**Gayman, Joel**

Instructor of Sociology (1973); Ph.B. 1970, Monterith College; M.A. 1973, Brandeis University

**Gifun, Frederick V.**

Assistant Professor of History (1973); B.A. 1963, Northeastern University; M.A. 1964, University of Oregon; Ph.D. 1972, University of Florida

**Glasser, Howard T.**

Associate Professor of Design (1970); Art Students League of New York and Brooklyn Museum Art School

**Golen, Frank Jr.**

Associate Professor of Business Administration (1959); B.S. 1950, Boston University; Ed.M. 1958, Bridgewater State College; C.A.G.S. 1962, Boston University

**Gonsalves, Lenine M.**

Professor of Electrical Engineering (1953); B.S. 1952, United States Naval Academy; M.S.E.E. 1960, Northeastern University; Registered Professional Engineer

**Gorczyca, Fryderyk E.**

Professor of Mechanical Engineering (1958); B.S. 1958, New Bedford Institute of Technology (SMU); M.S. 1962, Northeastern University; Registered Professional Engineer

**Gray, John W.**

Associate Professor of Electrical Engineering (1972); B.S.E.E. 1957, University of Nebraska; M.E.E. 1959, New York University; Ph.D. 1966, Ohio State University

**Greaves, John O.B.**

Associate Professor of Electrical Engineering (1972); B.S.E.E. 1966, M.S.E.E. 1967, Ph.D. 1971, University of California

**Greaves, Peggy E.**

Assistant Professor of Community Nursing (1974); B.S. 1970, M.S. 1974, California State University

**Griffith, James T.**

Assistant Professor of Medical Technology (1974); B.S. 1970, Southeastern Massachusetts University; M.T. (A.S.C.P.) 1970, The Memorial Hospital of Pawtucket School of Medical Technology; M.S. 1976, Southeastern Massachusetts University

**Habicht, Louise A.**

Associate Professor of English (1966); B.A. 1963, University of North Carolina; Ph.D. 1971, Brown University

**Hague, Charles J.**

Assistant Professor in Business Administration (1961); B.S.B.A. 1950, Boston College; LL.B. 1953, Boston College Law School

**Haimson, Barry R.**

Associate Professor of Psychology (1967); B.A. 1963, Brandeis University; A.M. 1965, Ph.D. 1970, Boston University

**Hall, Margaret M.**

Assistant Professor of English (1972); B.A. 1966, U.C.L.A.; Ph.D. 1971, University of Virginia

**Hansberry, John W.**

Associate Professor of Mechanical Engineering (1969, 1973); B.A. 1965, B.S.M.E. 1966, Rice University; Sc.M. 1968, Ph.D. 1973, Brown University; Registered Professional Engineer

**Haq, Kazi**

Professor of Physics (1970); B.Sc. 1945, M.Sc. 1946, Dacca University; Sc.D. 1954, Massachusetts Institute of Technology

**Hardy, Bertram B.**

Associate Professor of Electrical Engineering (1948); B.S.E.E. 1940, Brown University; M.S. 1958, Fremont College, Registered Professional Engineer

**Hargreaves, Kevin J.**

Assistant Professor of History (1972); B.A. 1964, Beloit College; M.A. 1966, Ph.D. 1974, Brandeis University

**Hatch, Elaine**

Visiting Lecturer in Institutional Nursing (1977); B.S. 1976, Southeastern Massachusetts University; M.S. 1977, Boston University

**Hatch, Walter I.**

Assistant Professor of Biology (1974); B.S. 1965, M.S. 1969, Tufts University; Ph.D. 1974, Boston University

**Hedquist, Ann Marie**

Associate Professor of Community Nursing (1971); B.S. 1960, Framingham State College; M.S. 1968, Syracuse University

**Helgeland, Robert Christian**

Assistant Professor of Electrical Engineering (1970); B.S.E.E. 1968, Southeastern Massachusetts University; M.S.E.E. 1970, Northeastern University; Registered Professional Engineer

**Higginson, Thomas J.**

Associate Professor of Business

Administration (1963); B.S. 1962, Boston College; M.B.A. 1963, Boston University

**Hill, Albert S.**

Associate Professor of History (1967); A.B. 1948, Boston University; M.A. 1949, Ph.D. 1963, Harvard University

**Hilowitz, Jane**

Assistant Professor of Sociology (1973); B.A. 1963, Columbia University; Diploma with Distinction 1966, Oxford University; D. Phil. 1969, Oxford University

**Hoagland, Everett**

Associate Professor of English (1973); B.A. 1964, Lincoln University; M.A. 1973, Brown University

**Hoening, Milton M.**

Professor of Physics (1965); B.A. 1954, Washington University; Ph.D. 1964, Cornell University

**Hoff, James G.**

Professor of Biology (1965); B.S. 1960, East Stroudsburg State College; M.S. 1962, Ph.D. 1965, Rutgers University

**Hogan, Richard A.**

Assistant Professor of Philosophy (1973); B.A. 1967, Middlebury College; M.A. 1969, Ph.D. 1974, Purdue University

**Holt, Warren M.**

Associate Professor of Mathematics (1951); B.S. 1949, University of Massachusetts; M.Ed. 1959, Bridgewater State College

**Holt, William R.**

Associate Professor of Psychology (1973); B.A. 1967, Williams College; M.A. 1972, Ph.D. 1973, Brown University

**Hooper, Robert J.**

Professor of Chemistry (1967); B.S. 1953, King's College; M.S. 1959, Ph.D. 1962, Notre Dame

**Hosford, M. Victoria**

Assistant Professor of Community Nursing (1973); B.S. 1967, Skidmore College; M.S. 1970, University of Colorado

**Hsia, Tao-Chen**

Associate Professor of History (1970); B.A. 1941, Chinan University; M.A. 1948, Columbia University; M.A. 1965, University of Minnesota; Doctorat d'Universite, University of Paris 1969

**Huff, Toby E.**

Assistant Professor of Sociology (1971); B.A. 1965, Northeastern University; M.A. 1967, Northwestern University; Ph.D. 1971, The New School of Social Research

**Hull, Maureen**

Associate Professor of Community Nursing (1977); B.S. 1955, Salve Regina College; M.S. 1968, Boston College

**Huse, Donna**

Assistant Professor of Sociology (1973); B.A. 1966, Stanford University; M.A. 1969, Ph.D. 1975, Brandeis University

**Ibara, Richard M.**

Associate Professor of Biology (1971); B.A. 1963, M.A. 1965, University of Hawaii; Ph.D. 1970, University of California

**Ingraham, Vernon L.**

Professor of English (1965); B.A. 1949, University of New Hampshire; M.A. 1951, Amherst; Ph.D. 1965, University of Pennsylvania

**Isaacson, Phyllis**

Visiting Lecturer in Music (1976); B.M. 1959, Boston University; M.M. 1971, New England Conservatory of Music

**Jackivicz, Thomas P.**

Associate Professor of Civil Engineering (1972); B.S.C.E.

1965, M.S. 1969, University of Miami; Ph.D. 1973, University of Massachusetts; Registered Professional Engineer

**Jackson, Raymond**

Associate Professor of Business Administration (1973); S.B. 1958, MIT, M.B.A. 1960, University of Chicago; Ph.D. 1967, Boston University

**Jacobskind, Barbara R.**

Assistant Professor of English (1971); B.A. 1966, Pennsylvania State University; M.A. 1967, Ph.D. 1970, Brown University

**Jhaveri, Madhusudan**

Assistant Professor of Civil Engineering (1974); B.S.C. 1963, S.V.V. — Gujerat, India; M.S. 1968, North Dakota State University; Ph.D. 1977, New Jersey Institute of Technology; Registered Professional Engineer

**John, Anthony J.**

Professor of Mathematics (1954); Chairperson, Department of Mathematics; B.S. 1950, M.A. 1957, Boston College; M.S. 1960, Northeastern University

**Johnson/Mills, Carolyn A.**

Assistant Professor of Design (1967); B.F.A. 1963, Rhode Island School of Design

**Kalikow, Theodora K.**

Associate Professor of Philosophy (1968); Chairperson, Department of Philosophy; B.A. 1962, Wellesley College; Sc.M. 1970, Massachusetts Institute of Technology; Ph.D. 1974, Boston University

**Kamm, Lewis R.**

Associate Professor of Foreign Languages and Literature (1971); B.A. 1966, Rutgers University; M.A. 1967, Ph.D. 1971, Brown University

**Kaput, James J.**

Associate Professor of Mathematics (1968); B.S. 1964, Worcester Polytechnic Institute; M.A. 1966, Ph.D. 1968, Clark University

**Katan, Elleda W.**

Assistant Professor of Art Education (1973); B.S. 1952, Columbia University; M.A.E. 1967, Teachers College Columbia University

**Kazama, Frederick Y.**

Associate Professor of Biology (1974); A.B. 1964, University of Nebraska; Ph.D. 1969, University of California

**Kern, Wolfhard**

Professor of Physics (1964); B.Sc. 1948, M.Sc. 1951, Universitat Frankfurt/Main; Ph.D. 1958, Universitat Bonn

**Khanna, Sat Dev**

Professor of Civil Engineering (1969); Chairperson, Department of Civil Engineering; M.A. 1949, B.Sc. 1952, M.Sc. 1965, University of Punjab, India; Ph.D. 1968, University of Connecticut; Registered Professional Engineer.

**Koot, Gerard M.**

Assistant Professor of History (1972); B.A. 1969, Assumption College; M.A. 1969, Ph.D. 1972, SUNY at Stony Brook

**Kowalczyk, Robert**

Assistant Professor of Mathematics (1975); B.A. 1968, Southeastern Massachusetts University; Ph.D. 1972, Brown University

**Kruger, Cynthia G.**

Associate Professor of Education (1970); Chairperson, Department of Education; B.S. 1964, Bridgewater State College; M.A. 1965, Clark University; Ph.D. 1971, Fordham University

**Laferriere, Martha**

Assistant Professor of English (1974); B.A. Bryn Mawr College; M.A. 1968, Ph.D. 1972, Brown University

**Laflamme, Alphee N.**

Associate Professor of Business Administration (1962); Chairperson, Department of Accounting and Finance; B.S. 1952, Providence College; M.Ed. 1957, Bridgewater State College; M.B.A. 1971, Boston College

**Langley, Kenneth D.**

Associate Professor of Textile Sciences (1968); B.S. 1964, SMTI (SMU); M.S. 1968, Institute of Textile Technology

**LaPlante, Merritt G.**

Professor of Business Administration (1971); B.S. 1958, M.S. 1960, University of Massachusetts; Ph.D. 1966, Texas A & M University

**Larschan, Richard J.**

Assistant Professor of English (1972); B.A. 1964, Colby College; M.A. 1966, Ph.D. 1975, University of California

**Law, Frederick M.**

Professor of Civil Engineering (1970); B.S.E. 1956, Princeton University; M.S.C.E. 1962, Newark College of Engineering; Ph.D. 1965, Rutgers University. Registered Professional Engineer

**Legault, Richard D.**

Assistant Professor of Business Administration (1973); B.S. 1968, Southeastern Massachusetts University; M.B.A. 1973, University of Rhode Island

**Leung, George Yan-Chok**

Professor of Physics (1967); B.S. 1955, University of Illinois; M.S. 1957, Ph.D. 1963, Massachusetts Institute of Technology

**London, Peter**

Professor of Art Education



(1971); Chairperson, Art Education Department; B.A. 1961, Queens College; M.F.A. 1962, Columbia University; Ed.D. 1970, Columbia University Teachers College

**Luti, Vincent F.**

Associate Professor of Music (1971); B.A. 1952, M.M. 1967, M.M.A. 1970, Yale University

**Macafee, Georgette**

Associate Professor of Art (1965); B.A. 1962, M.A. 1968, Rhode Island School of Design

**Macedo, Celestino D.**

Dean of Students (1968); Associate Professor of English (1954); A.B. 1953, Stonehill College; A.M. 1955, Boston College

**Maney, Gertrude D.**

Associate Professor of Community Nursing (1970); B.S. 1964, M.S. 1969, Boston College

**Marlow, James E.**

Associate Professor of English (1973); B.A. 1960, Dartmouth College; Ph.D. 1972, University of California

**Massano, Giulio**

Assistant Professor of Foreign Languages and Literature (1974); B.A. 1965, Studium Theologicum; M.A. 1971, Ph.D. 1973, Catholic University of America

**Masterson, Russell W.**

Professor of Psychology (1968); B.A. 1955, Holy Cross College; M.Ed. 1957, Ph.D. 1968, Boston College

**Matsumoto, Barton**

Associate Professor of Biology (1971); B.S. 1959, University of Oregon; M.S. 1961, University of Hawaii; Ph.D. 1971, University of California



**Mattfield, Frederic R.**

Professor of Business Administration (1958); B.S. 1939, M.B.A. 1950, M.Ed. 1950, Boston University

**Mattfield, Mary S.**

Associate Professor of English (1964); B.S. 1955, Boston University; A.M. 1964, Brown University

**McCabe, Robert**

Associate Professor of Mathematics (1964); B.S. 1957, Union College; M.A. 1960, San Diego State College; Ph.D. 1971, Boston University

**McCarthy, Walter J.**

Professor of Civil Engineering (1973); S.B. 1955, Massachusetts Institute of Technology; M.S. 1966, Northeastern University; Registered Professional Engineer

**McCoy, Thomas F.**

Professor of Fine Arts (1959); Chairperson, Department of Fine Arts; B.F.A. 1950, University of Kansas; Diploma 1951, Academie Royale des Beaux Arts, Liege, Belgium; M.F.A. 1952, University of Kansas

**McEachern, Janice**

Associate Professor of Institutional Nursing (1969); B.S. 1963, M.S. 1965, Boston University

**McKinley, Donald G.**

Professor of Sociology (1972); M.A. 1951, University of Washington, Ph.D. 1960, Harvard University

**McFerson, Hazel**

Assistant Professor of Political Science (1974); B.A. 1969, University of Massachusetts; M.A. 1970, Fletcher School of Law and Diplomacy; Ph.D. 1975, Brandeis University

**Mead, Theodore P.**

Professor of Design (1952);

B.F.A. 1947, Pratt Institute; M.A. 1950, Professional Diploma 1962, Columbia University

**Melanson, Philip H.**

Associate Professor of Political Science (1971); Chairperson, Department of Political Science; B.A. 1966, M.A. 1968, Ph.D. 1972, University of Connecticut

**Mellor, George E.**

Associate Professor of Art (1968); A.B. 1954, Oberlin College; M.F.A. 1965, Temple University

**Mierzejewski, Walter E.**

Associate Professor of Mathematics (1957); A.B. 1948, Harvard University; C.A.G.S., Boston University

**Miraglia, Anthony J.**

Instructor of Fine Arts (1975); B.F.A. 1973, Cleveland Institute of Art; M.F.A. 1975, Syracuse University

**Moreira, Maria N.**

Assistant Professor of Foreign Languages and Literature (1973); Docteur en Lettres 1969, Universite de Toulouse, France

**Moss, Sanford A.**

Professor of Biology (1967); B.S. 1961, Yale University; Ph.D. 1965, Cornell University

**Mowery, Dwight F., Jr.**

Commonwealth Professor of Chemistry (1957); A.B. 1937, Harvard College; Ph.D. 1940, Massachusetts Institute of Technology

**Mulcare, Donald J.**

Associate Professor of Biology (1969); B.S. 1962, St. Procopius College; Ph.D. 1968, University of Notre Dame

**Murphy, Daniel J.**

Professor of Electrical Engineering (1962); B.S. 1960, New Bedford Institute of Technology

(SMU); M.S. 1966, Ph.D. 1969, Northeastern University; Registered Professional Engineer

**Nagao, Ronald T.**

Assistant Professor of Biology (1974); B.A. 1967, B.S. 1967, University of California; Ph.D. 1971, Oregon State University

**Nakamura, Royden**

Associate Professor of Biology (1972); B.A. 1961, M.S. 1965, University of Hawaii; Ph.D. 1970, University of British Columbia

**Nanopoulos, Mary**

Assistant Professor of Institutional Nursing (1973); B.S. Ed. 1955, Fitchburg State College; M.S. Nursing 1974, University of Rhode Island

**Nee, James M.**

Assistant Professor of English (1971); B.A. 1959, M.A. 1963, Boston College; Ph.D. 1970, University of Michigan

**Neugebauer, Margot**

Professor of Design (1955); Chairperson, Department of Design; B.F.A. 1952, Rhode Island School of Design; M.F.A. 1954, Syracuse University

**Nichols, Jean A.**

Assistant Professor of Biology (1975); B.A. 1969, Pomona College; Ph.D. 1975, Massachusetts Institute of Technology/Woods Hole Oceanographic Institute

**Nicolet, William P.**

Professor of English (1965); B.A. 1956, Bowdoin College; M.A. 1958, Ph.D. 1964, Brown University

**O'Brien, Francis X.**

Associate Professor of Biology (1968); Chairperson, Department of Biology; B.A. 1963, Suffolk University; M.S. 1965,

Ph.D. 1972, University of New Hampshire

**O'Hara, Robert Paul**

Professor of Education (1971); B.A. 1946, M.A. 1947, M.Ed. 1956, Boston College; Ed.D. 1958, Harvard University

**O'Neill, John J.**

Professor of Education (1970); A.B. 1942, Harvard College; A.M. 1948, Boston University; Ed.M. 1952, Ed.D. 1960, Harvard Graduate School of Education

**O'Neill, Rita H.**

Associate Professor of Institutional Nursing (1973); Chairperson, Department of Institutional Nursing; B.S. 1960, M.S. 1967, Boston University

**Pallatroni, Robert P.**

Associate Professor of Psychology (1968); B.A. 1954, Dartmouth College; M.Ed. 1960, State College at Bridgewater, A.M. 1962, Ph.D. 1969, Boston University

**Panos, Margaret A.**

Assistant Professor of English (1962); A.B. 1954, Stonehill College; M.A.T. 1966, Brown University

**Panunzio, Wesley C.**

Associate Professor of Foreign Languages and Literature (1964); A.B. 1935, A.M. 1940, Ph.D. 1957, Harvard University

**Parente, Paul J.**

Professor of Mathematics (1954); B.S. 1954, Bradford Durfee College of Technology (SMU); A.M. 1961, Boston University

**Pattek, Harold I.**

Professor of Design (1966); 1948-1952 The Cooper Union Art School; B.F.A. 1957, Yale University



**Perry, Ronald S.**

Professor of Textile Science (1973). Chairman, Department of Textile Sciences, B.S. 1958, NBIT (SMU); M.S. 1960, M.S. 1962, Ph.D. 1965, Lowell Technical Institute

**Petrie, Stephen**

Assistant Professor of Textile Sciences (1977); B.S. 1967, M.S. 1968, Lowell Technological Institute; Ph.D. 1977, University of Connecticut

**Philbrick, William A.**

Assistant Professor of Education (1973); A.B. 1944, Boston College; M.Ed. 1951, Boston College — Boston University

**Phipps, Geraldine M.**

Associate Professor of History (1971); B.S. 1960, M.A. 1961, Ph.D. 1972, University of Pennsylvania

**Pisarczyk, Joan**

Visiting Lecturer in Community Nursing (1976); B.S. 1967, M.S. 1970, Boston University

**Place, James Gordon**

Assistant Professor of Philosophy (1971); B.A. 1964, M.A. 1968, Ph.D. 1971, Southern Illinois University

**Plumhoff, Steven**

Instructor of Fine Arts (1975); B.F.A. 1969, Minneapolis College of Art and Design; M.F.A. 1974, Rhode Island School of Design

**Presel, Donald S.**

Associate Professor of Physics (1960); A.B. 1953, Brown University; M.Ed. 1959, M.S. 1964, Northeastern University

**Puryear, Thomas W.**

Assistant Professor of Art History (1970); Chairperson, Department of Art History; B.A. 1965, Vanderbilt University; M.A. 1968, Ph.D. 1975, Indiana University

**Puryear, Marjorie Durko**

Assistant Professor of Textile Design (1977); B.F.A. 1966, School of the Art Institute (Chicago); M.F.A. 1969, Indiana University

**Radosevich, Roseann**

Instructor of Fine Arts (1973); B.A. 1971, University of Pittsburgh; M.F.A. 1973, Tyler School of Art

**Reardon, John J.**

Professor of Biology (1965); B.S. 1948, M.S. 1949, University of Michigan; Ph.D. 1959, University of Oregon

**Reeve, Penn**

Associate Professor of Sociology (1974); A.B. 1963, University of California; M.A. 1967, California State University; Ph.D. 1974, Washington University in St. Louis

**Rehg, Norman M.**

Professor of English (1964); B.A. 1939, M.A. 1943, University of Kansas; A.M. 1948, Ph.D. 1952, Harvard University

**Reis, Richard H.**

Professor of English (1965); A.B. 1952, St. Lawrence University; M.A. 1957, Ph.D. 1960, Brown University

**Richard, Conrad P.**

Associate Professor of Mechanical Engineering (1956); B.S. 1950, Rhode Island School of Design; Registered Professional Engineer

**Richard, J. Roland**

Associate Professor of Business Administration (1973); B.S. 1963, Bentley College; M.B.A. 1966, Boston College; Certified Public Accountant

**Rifkin, Lester H.**

Professor of History (1965); B.S. 1945, A.M. 1946, New York University; Ph.D. 1959, Brown University

**Riley, James B.**

Assistant Professor of Psychology (1973); B.A. 1964, Bowdoin College; M.A. 1971, Ph.D. 1974, Boston College

**Ritz, Frederick J.**

Assistant Professor of Textile Sciences (1966); B.S. 1957, Bradford Durfee College of Technology (SMU)

**Rizzi, Peter A.**

Professor of Electrical Engineering (1970); B.S. 1951, University of Rhode Island; M.Eng. 1952, Ph.D. 1955, Yale University

**Robitaille, Louis J.**

Associate Professor of Business Administration (1958); B.S. 1949, Providence College; M.Ed. 1954, Boston University; Registered Public Accountant

**Rocha, Gregory F., Jr.**

Associate Professor of Foreign Languages and Literature (1965); Chairperson, Department of Foreign Languages and Literature; Ph.B. 1944, Providence College; A.M. 1948, Columbia University

**Rocha, Maria Eliza**

Assistant Professor of Foreign Languages and Literature (1966); B.A. 1940, College of Sacred Heart, Puerto Rico; M.A. 1948, Columbia University

**Rosen, Alan R.**

Associate Professor of English (1968); B.A. 1960, University of Hartford; M.A. 1962, Pennsylvania State University

**Rosenfield, M.C.**

Professor of History (1966); A.B. 1951, A.M. 1957, Boston University; Ph.D. 1961, University of London

**Rossi, Michael A.**

Professor of Psychology (1973); M.A. 1956, Stanford University; Ph.D. 1958, University of Utah

**Rotondi, William J.**

Professor of Education (1970); A.B. 1948, M.A. 1951, Boston College; Ed.D. 1969, Harvard University

**Russell, John J.**

Professor of Physics (1970); B.S. 1955, Ph.D. 1959, Massachusetts Institute of Technology

**Rutman, Roman**

Associate Professor of Electrical Engineering (1977); M.S.M.E. 1956, Omsk Polytechnic Institute; Ph.D. 1963, USSR Academy of Sciences, Moscow

**Ryan, Edward**

Associate Professor of Sociology (1972); B.A. 1947, Pomona College; M.A. 1948, Claremont Graduate School; Ph.D. 1961, Harvard University

**Saluti, Dean J.**

Assistant Professor of Business Administration (1974); B.S. 1970, Boston University; M.Ed. 1971, Boston State College; M.B.A. 1973, Boston College; D.Ed. 1976, Boston University

**Sandstroem, Yvonne M.**

Associate Professor of English (1969); B.A. 1954, Lund University, Sweden; A.M. 1966, Ph.D. 1970, Brown University

**Sasseville, Normand H.**

Professor of Biology (1956); B.S. 1949, Providence College; Ed.M. 1950, Boston University

**Sauro, Joseph P.**

Dean, College of Arts and Sciences (1969); Associate Professor of Physics (1965); B.S. 1955, M.S. 1958, Ph.D. 1965, Polytechnic Institute of Brooklyn

**Scionti, Joseph N. Jr.**

Professor of History (1965); B.A. 1960, Suffolk University; M.A. 1961, Tufts University; Ph.D. 1967, Brown University

**Sears, James R.**

Associate Professor of Biology (1974); B.A. 1964, University of Oregon; M.S. 1966, Ph.D. 1970, University of Massachusetts

**Sharp, Gene**

Professor of Sociology and Political Science (1970); B.A. 1949, M.A. 1951, Ohio State University; Ph.D. 1968, Oxford University

**Shen, Thomas B.C.**

Associate Professor of Mechanical Engineering (1970); B.S. 1958, Taiwan Provincial Cheng Kung University; M.S. 1963, Brown University; Ph.D. 1970, Harvard University

**Silveira, William A.**

Associate Professor of Textile Sciences (1956); B.S. 1954, New Bedford Institute of Technology (SMU); M.S. 1956, Institute of Textile Technology

**Silvia, Manuel S.**

Associate Professor of Business Administration (1959); B.S. 1955, New York University; M.Ed. 1959, Bridgewater State College; J.D. 1967, New England Law School

**Simeone, Louis S.J.**

Professor of Mathematics (1946); B.S. 1945, Northeastern University; A.M. 1951, Boston University

**Singleton, Lawrence D.**

Assistant Professor of Education (1974); B.A. 1963, Calvin Coolidge College; M.A. 1972, Long Island University; Ed.D. 1975, University of Massachusetts

**Smith, Caleb A.**

Professor of Economics (1966); Chairperson, Department of Economics; S.B. 1937, Haverford College; M.A. 1942, Ph.D. 1943, Harvard University

**Sorkin, Roger**

Assistant Professor of English (1973); B.A. 1965, Queens College; M.A. 1971, Harvard University

**Stauder, Jack**

Associate Professor of Sociology (1973); Chairperson, Department of Sociology/Anthropology; B.A. 1962, Harvard University; M.A. 1964, Ph.D. 1968, Cambridge University

**Stern, T. Noel**

Professor of Political Science (1964); B.A. 1934, Swarthmore; M.A. 1940, Ph.D. 1942, University of Pennsylvania

**Stewart, Albert A.**

Associate Professor of Mechanical Engineering (1946); S.B. 1932, Massachusetts Institute of Technology; M.A. 1952, Boston University

**Stone, Samuel A.**

Commonwealth Professor of Mathematics (1948); B.S. 1936, M.S. 1937, University of New Hampshire; Ph.D. 1953, Boston University

**Su, Timothy**

Assistant Professor of Chemistry (1975); B.A. 1967, Hope College; Ph.D. 1971, Wayne State University

**Swaye, Arthur V.**

Associate Professor of Textile Sciences (1958); B.S. 1958, M.S. 1965, New Bedford Institute of Technology (SMU)

**Tabachnik, Priscilla R.**

Associate Professor of Business Administration (1963); B.S. 1963, New Bedford Institute of Technology (SMU); M.B.A. 1966, Boston University

**Tannenwald, Ronald**

Associate Professor of Mathematics (1968); Sc.B. 1963, The City College of New York; Ph.D. 1968, Brown University

**Teeter, Lura S.**

Professor of Philosophy (1965); A.B. 1928, University of California; A.M. 1934, Ph.D. 1951, Radcliffe College

**Thibault, Doris**

Associate Professor of Education (1969); B.A. 1956, Rivier College; M.Ed. 1963, Boston College; Ed.D. 1970, Boston University

**Thomas, George J., Jr.**

Professor of Chemistry (1968); Chairperson, Department of Chemistry; B.S. 1964, Boston College; Ph.D. 1967, Massachusetts Institute of Technology

**Thomas, George J.**

Assistant Professor of Civil Engineering (1957); S.B. 1938, Massachusetts Institute of Technology; Registered Professional Engineer; Registered Land Surveyor

**Thommen, Hans U.**

Professor of Mechanical Engineering (1967); dipl. ing. 1951, Swiss Federal Institute of Technology; Ph.D. 1958, Brown University

**Thompson, Edwin J.**

Assistant Professor of English (1973); B.A. 1969, Southeastern Massachusetts University; M.A. 1970, Ph.D. 1974, Brown University

**Tinkham, Howard C.**

Professor of Mechanical Engineering (1949); B.S. 1949, Worcester Polytechnic Institute; M.S. 1961, Northeastern University

**Toatley, James C.**

Visiting Lecturer, Design (1976).

Diploma 1966 Pennsylvania Academy of the Fine Arts; M.F.A. 1976, Boston University

**Togneri, Edward P.**

Professor of Fine Arts (1957); B.F.A. 1951, Rhode Island School of Design

**Tondat, Lynn Marie**

Assistant Professor of Psychology (1975); B.A. 1971, M.A. 1973, State University of New York; Ph.D. 1975, Ohio University

**Tschirch, Ann E.**

Associate Professor of Institutional Nursing (1974); B.S. 1969, Salve Regina College; M.S. 1971, Boston College

**Twomey, John H.**

Assistant Professor of Modern Languages (1972); B.A. 1967, Southern Connecticut State College; Ph.D. 1973, St. Louis University

**Tykodi, Ralph J.**

Professor of Chemistry (1965); B.S. 1949, Northwestern University; Ph.D. 1954, Pennsylvania State University

**Vena, Dante**

Associate Professor of Art Education (1972); B.S. 1957, M.S. 1960, University of Wisconsin; Ph.D. 1976, University of Iowa

**Vinci, Joseph**

Professor of Foreign Languages (1966); B.A. 1942, The City College of New York; M.A. 1949, Columbia University; D.M.L. 1955, Middlebury College

**Walder, Richard**

Associate Professor of Electrical Engineering (1956); B.S. 1948, University of Rhode Island

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**Wagner, Claude W.**

Associate Professor of Chemistry (1949). B.S. 1946, M.S. 1949. University of Cincinnati

**Walker, Donald E.**

President of Southeastern Massachusetts University (1972). Professor of Psychology and Sociology (1972). A.B. 1943, M.Th. 1947, University of Southern California. Ph.D. 1954. Stanford University

**Walsh, Mary Louise**

Assistant Professor of Foreign Languages and Literature (1965). Associate Dean of Students (1966). A.B. 1937, Regis College. M.A. 1956, Boston University. Diploma 1954, University of Paris (Sorbonne). Certificate 1961, University of Besancon

**Ward, Richard J.**

Dean, College of Business and Industry (1974). Professor of Business Administration (1974). B.S. 1946, Harvard College. M.A. 1948, Ph.D. 1958, University of Michigan

**Washington, Ida Harrison**

Professor of Foreign Languages and Literature (1966). B.A. 1946, Wellesley College. M.A. 1950, Middlebury College. Ph.D. 1962, Columbia University

**Washington, Lawrence M.**

Professor of Foreign Languages and Literature (1966). B.A. 1949, M.A. 1950, Middlebury College. Ph.D. 1958, Brown University

**Wassmer, Thomas A.**

Professor of Philosophy (1971). A.B. 1938, Fordham University. Ph.L. 1943, Woodstock College of Georgetown University. S.T.L. 1950, Weston College. M.A. 1951, Ph.D. 1954, Fordham University

**Waxler, Robert**

Assistant Professor of English (1975). B.A. 1967, Brown University. M.A. 1969, Boston College. Ph.D. 1975, State University of New York

**Wechter, Margaret A.**

Associate Professor of Chemistry (1973). B.S. 1962, Mundelein College. Ph.D. 1967, Iowa State University

**Weeks, Walter James**

Associate Professor of Foreign Languages and Literature (1965). A.B. 1962, Rutgers University. M.A. 1964, Ph.D. 1970, Brown University

**Werly, John M.**

Assistant Professor of History (1972). B.A. 1961, M.A. 1966, Trinity College. Ph.D. 1972, Syracuse University

**Wetmore, Donald C.**

Assistant Professor of Business Administration (1971). A.B. 1942, Harvard College. M.B.A. 1947, Harvard Graduate School of Business Administration. C.A.G.S. 1974, D.Ed. 1976, Boston University

**White, Charles William III**

Professor of English (1966). B.A. 1958, Boston University. M.A. 1961, Tufts University. Ph.D. 1967, Harvard University

**Wild, William C., Jr.**

Dean of Administration (1974). Professor of Business Administration (1950). B.S. 1946, Bridgewater State College. M.B.A. 1960, Northeastern University. Ed.D. 1968, Boston University

**Williams, Eugene R.**

Associate Professor of Mechanical Engineering (1946). B.S. Ch.E. 1942, Northeastern University. M.Ed. 1955, Rhode Island College. Registered Professional Engineer

**Wilson, Alton R.**

Assistant Professor of Textile Sciences (1970). B.S. 1965, M.S. 1969, Southeastern Massachusetts University

**Wilson, Robert S.**

Assistant Professor of Biology (1974). B.A. 1969, M.A. 1972, Ph.D. 1975, University of California

**Windham, Howard**

Assistant Professor of Design (1973). B.F.A. 1963, Rhode Island School of Design. M.F.A. 1967, Southeastern Massachusetts University

**Winkler, Dietmar**

Dean, College of Fine and Applied Arts (1977). Professor of Design (1977). 1954-1957, Kunstschule Alsterdamm. 1949-1960, Rhode Island School of Design

**Witherell, Robert J.**

Assistant Professor of Business Administration (1973). B.S., B.A. 1965, Southeastern Massachusetts University. M.B.A. 1969, Suffolk University

**Wolock, Fred W.**

Professor of Mathematics (1965). B.S. 1947, College of the Holy Cross. M.S. 1948, Catholic University of America. Ph.D. 1964, Virginia Polytechnic Institute

**Wu, Chang Ning**

Professor of Chemistry (1963). B.A. 1956, Hartwick College. M.S. 1962, Ph.D. 1964, State University of Iowa

**Yoken, Melvin B.**

Associate Professor of Foreign Languages and Literature (1966). B.B.A. 1960, University of Massachusetts. M.A.T. 1961, Brown University. Ph.D. 1972, Four-College Program

**Young, Milton A.**

Associate Professor of Education (1972). B.S. 1951, M.A. 1952, Long Island University. Ph.D. 1956, University of Connecticut

**Zanin, Virgilio**

Assistant Professor of Sociology (1970). Dottorato 1963, University of Florence, Italy. M.A. 1969, University of Connecticut

**Zoretic, Philip**

Associate Professor of Chemistry (1973). B.S. 1960, M.S. 1963, University of Richmond. Ph.D. 1967, University of Pittsburgh



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## Clinical Faculty in Medical Technology

---

### **Allegra, Salvatore**

Clinical Associate Professor of Medical Technology; Medical Director, St. Joseph's Hospital School of Medical Technology; Classical Maturity degree 1941, Rivaldini Lycee; M.D. 1947, University of Bologna; Sp. Hematology 1954, University of Pavla.

### **Aronson, Stanley M.**

Clinical Professor of Medical Technology; Dean, Brown Medical School; B.S. 1943, College of the City of New York; M.D. 1947, New York University

### **Autotte, Janet**

Clinical Instructor of Medical Technology, Memorial Hospital School of Medical Technology; B.S. 1969, Salve Regina College, Certified 1969, Waterbury Hospital

### **Bergeron, Dorothy**

Clinical Assistant Professor of Medical Technology; Education Coordinator, Rhode Island Hospital School of Medical Technology; B.S. 1970, Rhode Island College; Certified 1970, Rhode Island Hospital; M.S. 1977, University of Vermont

### **Chernow, Marvin**

Clinical Associate Professor of Medical Technology; Medical

Director, Newport Hospital School of Medical Technology; B.A. 1945, Miami University; M.D. 1949, New York Medical College

### **Cok, Gladys**

Clinical Assistant Professor of Medical Technology; Program Director, St. Joseph's Hospital School of Medical Technology; B.S. 1948, Ph.D. 1952, St. Thomas Aquino University; Post-Doctoral 1955, University of Puerto Rico School of Tropical Medicine

### **Davis, Lucille O.**

Clinical Instructor of Medical Technology; Education Coordinator, Rhode Island Medical Center School of Medical Technology; B.S. 1946, Rhode Island College of Pharmacy and Allied Services

### **Geddes, Claire M.**

Clinical Assistant Professor of Medical Technology; Program Director, Memorial Hospital School of Medical Technology; B.S. 1946, College of our Lady of the Elms; Certified 1950, Memorial Hospital School of Medical Technology; M.A. 1976, Central Michigan University

### **Johnson, John**

Clinical Instructor of Medical

Technology, Education Coordinator, Newport Hospital School of Medical Technology; B.S. 1949, Institute of Medical Laboratory Technology, New Britain; Certified 1955, Miami Valley Hospital School of Medical Technology

### **LeClair, Susan**

Clinical Assistant Professor of Medical Technology; Program Director, Miriam Hospital School of Medical Technology; B.S. 1968, Stonehill College; Certified 1968, St. Vincent's Hospital School of Medical Technology; M.S. 1977, Southeastern Massachusetts University

### **Lee, Ho Yong**

Clinical Associate Professor of Medical Technology; Medical Director, Rhode Island Medical Center School of Medical Technology; M.D. 1950, Seoul National University, College of Medicine; Ph.D., 1963, Seoul National University

### **Lichtman, Herbert C.**

Clinical Associate Professor of Medical Technology; Medical Co-Director, Miriam Hospital School of Medical Technology; B.A. 1942, Brooklyn College; M.D. 1945, Long Island College of Medicine

### **Meissner, George F.**

Clinical Associate Professor of Medical Technology; Medical Director, Rhode Island Hospital School of Medical Technology; M.D., C.M. 1943, Queen's University; M.Sc. 1951, McGill University

### **Micolonghi, Thomas S.**

Clinical Associate Professor of Medical Technology; Medical Director, Memorial Hospital School of Medical Technology; Classical Maturity Degree 1943, Royal Lycee of Tivoli; M.D. 1950, University of Rome Medical School

### **Sutherland, Linda**

Clinical Instructor of Medical Technology, Assistant Education Coordinator, Rhode Island Medical Center School of Medical Technology; B.S. 1971, University of Rhode Island; Certified, Rhode Island Medical Center School of Medical Technology

### **Zacks, Sumner I.**

Clinical Associate Professor of Medical Technology; Medical Co-Director, Miriam Hospital School of Medical Technology; B.A. 1951, Harvard University; M.D. 1955, Harvard University

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## Faculty Emeritus

---

Professor Robert E. Cooper

Professor James L. Giblin

Professor John Greenhalgh

Professor John T. Regan

Professor Antone Rodil

Professor Augustus Silva

Professor Francis Tripp

Professor Fred R. Tripp

Professor Frederick Winter



# Administrative Personnel

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## Academic Affairs

---

**Robert Archer**

Director, Television Services

**Jane K. Booth**

B.S., M.L.S.

Associate University Librarian  
for Public Services

**Barbara S. Brown**

B.A.

Staff Coordinator, Special Pro-  
grams, Division of Continuing  
Studies

**Victor P. Caliri**

B.S., M.A., Ed.M., Ph.D.

Associate Dean, College of Arts  
and Sciences

**Ruby Dottin**

M.Ed.

Director of Upward Bound

**Walter R. Frost**

B.A., M.Ed.

Director, Audiovisual

**Gerald J. Gagne**

B.A., M.L.S.

Associate University Librarian  
for Technical Services

**Edith Kameron**

B.A.

Staff Coordinator, Institute on  
Health and Long Life, Division  
of Continuing Studies

**Carroll R. McCloud**

B.A.

Assistant Director for Student  
Services, Division of Continuing  
Studies

**Cheryl Ochs**

Ed.D.

Assistant Director and Coordin-  
ator of Professional and Personal  
Development Programs, Division  
of Continuing Studies

**Mathew R. Sgan**

B.A., M.A., Ph.D.

Assistant to the Dean of the  
College of Arts and Sciences

**David A. Sullivan**

A.B., B.D., M.A.

Director of Special  
Programs

**Barbara Tate**

A.B.

Director of College Now

**Mary T. Vermette**

B.A., M.Ed., M.A., Ph.D.

Director, Project BICENTRAD,  
Division of Continuing Studies

**Roger White**

B.A., M.Ed.

Director, Cooperative Learning  
Center

**Sandra White**

B.A.

Staff Coordinator, Programs in  
Business and Industry, Division  
of Continuing Studies

**Dorice J. G. Wright**

B.A., M.A.T.

Administrative Assistant to the  
Dean of Faculty

---

## Administrators Emeritus

---

**Provost William Holland**

**Dean Sr. Madeleine Clemence  
Vaillot**



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**Administrative Affairs**

---

**Carolyn W. Hamel**

B.S.  
Systems Analyst

**Gordon E. Van Brunt**

B.S.  
Manager of Computer Operations

**Peter J. Kenney**

B.S. C. L.E.  
Director of Computer Center

---

**Fiscal Affairs**

---

**George Brisson**

B.S., M.B.A.  
Assistant Comptroller, Bursar

**Rita F. Morotti**

Staff Assistant, Personnel

**Susan T. Costa**

B.S.  
Assistant Director of Campus  
Center

**Robert Sacco**

B.A.  
Night Supervisor, Campus Center

**James Costa**

B.S.  
Comptroller

**Diane Savoie**

B.S.  
Assistant Bursar

**Francis H. Gordon**

B.S.  
Director of Auxiliary Services

**Roger P. Tache**

Business Manager

**George T. Groebe**

A.A.  
Staff Assistant, Purchasing

**John Taylor**

Assistant Manager  
University Campus Shop

**Kevin W. Hill**

B.A., M.B.A.  
Director of Housing

**Richard Waring**

B.A., M.A.  
Director of Campus Center

**Foster Jacobs**

B.S. M.E.  
Director of Planning and Plant

**Ernest A. Wheeler**

Director  
University Campus Shop

**John L. Lewis**

B.S.  
Assistant Director of Auxiliary  
Services

**Edwin G. Limoges**

Assistant Director of Planning  
and Plant

**Raymond C. McKearney**

Chief of Safety and Security

**John McKenna**

Staff Assistant to Business  
Manager

---

**Student Affairs**

---

**Lucien J. Beauregard**

B.A.  
Athletic Equipment Manager

**Manuel C. Carreiro**

B.A., M.A.  
Director of Residence Life

**Harry W. Connolly**

B.S.  
Director of Athletics

**Gerald S. Coutinho**

B.S., M.A.  
Director of Financial Aid

**Ann M. Dolan**

A.B.  
Staff Assistant to Director of  
University Records

**Robert A. Dowd**

B.A., M.Ed.  
Assistant Director of Athletics,  
Track Coach

**Paul D. Fistori**

B.S., Ed.M.  
Director of University Records

**James A. Flanagan**

B.S.  
Director of Career Planning and  
Placement

**Maryellen Forman**

R.N., B.S.  
Staff Nurse

**William E. Gathright, Jr.**

B.S.  
Intramural Director

**Virginia Hadley**

B.A., M.Ed.  
Assistant Director of Counseling

**Donald C. Howard**

B.S., M.A.  
Associate Dean of Students

**Thomas M. Mulvey**

A.B., M.A.  
Associate Dean of Students

**Deborah Murphy**

B.A.  
Staff Assistant, Financial Aid

**Mark J. Nahorney**

B.A.  
Program Coordinator, Campus  
Center

**John E. Negri**

B.S., M.S.  
Athletic Trainer

**Paul Nolin**

B.S.  
Assistant Director of University  
Records

**John A. Peters, Jr.**

B.S.  
Staff Assistant, Financial Aid

**Barrie G. Phelps**

A.B.  
Director of Admissions

**Helen F. Potthoff**

R.N., B.A., M.Ed.  
Staff Nurse

**Charles R. Ratto**

B.S., M.B.A., M.Ed., Ed.D.  
Director of Counseling and  
Health Services

**Scoba F. Rhodes**

B.S., M.Ed.  
Associate Director of Admissions  
and Transfer Affairs

**Judith A. Sullivan**

B.S.  
Assistant Athletic Director

**Geraldine M. Sullivan**

B.S.  
Transfer Admissions Counselor

**Mary Louise Walsh**

A.B., M.A.  
Associate Dean of Students

**Bruce E. Wheeler**

B.S., M.S.  
Baseball and Basketball Coach

**Max Zurflueh**

B.A., M.A., Ph.D.  
Psychologist

---

**University Affairs**

---

**Daniel G. Aldrich III**

B.S., M.P.A., Ph.D.  
Assistant to the President

**William J. Cox**

B.A.  
Director of University Develop-  
ment Office

**Cecelia B. Denwood**

Staff Assistant to the Board  
of Trustees

**Major Morris**

Ed.M.  
Special Assistant, Equal  
Opportunity/Intergroup Relations

**Gregory O. Stone**

Staff Associate, President's  
Office

**Catherine Mary Sullivan**

B.A.  
Staff Assistant, President's  
Office

**James S. Wiley**

A.B., M.B.A.  
Director of Public Relations



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**Design Team:**

Jeannette Joly '77

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Jon Olson '77

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James Wiley

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